

Evidence in Conservation Teaching Initiative

Un'introduzione alla conservazione basata sull'evidenza (contenuto adattato per ricercatori)

A cura di Harriet Downey, Tatsuya Amano e Jessica Walsh
Esercitazione creata da Rachel Antwis
2020

An Introduction to evidence-based conservation (content tailored for research scientists)
By Harriet Downey, Tatsuya Amano and Jessica Walsh
2020
Translated to Italian by Sandro Bertonlino

<https://www.britishecologicalsociety.org/applied-ecology-resources/about-aer/additional-resources/evidence-in-conservation-teaching/>

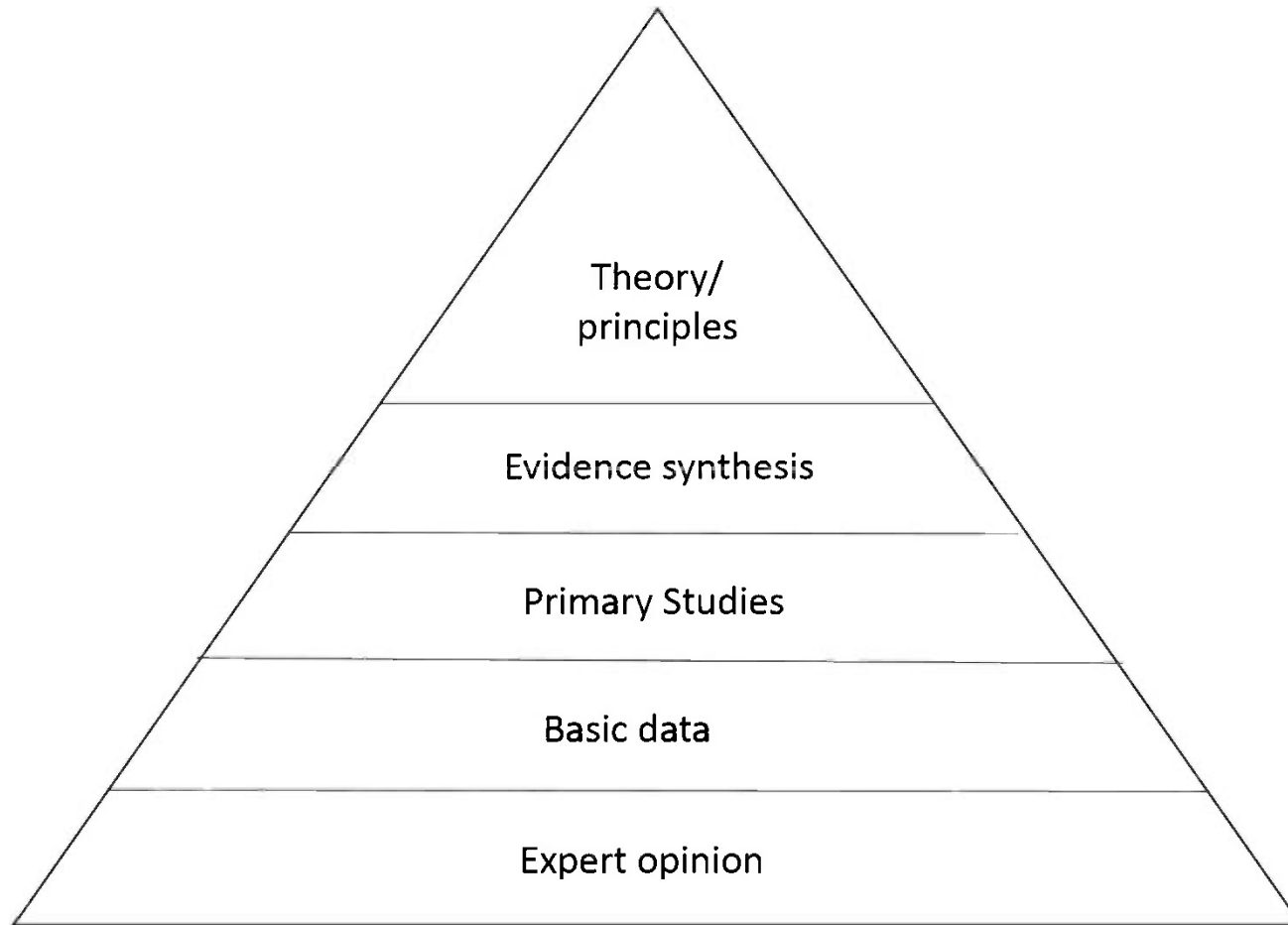
SOMMARIO

- Che cosa sono le evidenze scientifiche e perché sono importanti?
- Come vengono utilizzate le evidenze scientifiche nella conservazione?
- Quali sono gli ostacoli all'uso delle evidenze scientifiche nella conservazione?
- Come vengono affrontate queste barriere?
- Sintesi delle evidenze
- Revisioni sistematiche
- Mappe sistematiche
- Sintesi / sommari
- Strumenti di supporto decisionale
- Sfide della sintesi delle evidenze

Cos'è una evidenza scientifica?

- Informazioni rilevanti utilizzate per valutare una o più ipotesi relative a una domanda di interesse.
- Le evidenze scientifiche si riferiscono specificamente alle informazioni che sono state raccolte utilizzando un metodo scientifico. Ciò include studi pubblicati, sottoposti a revisione paritaria, e studi non pubblicati contenuti in tesi o rapporti

Tutte le evidenze sono uguali?



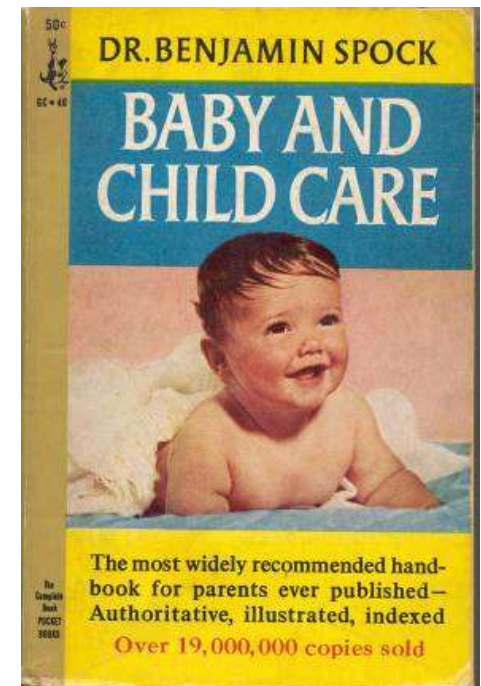
Salafsky et al. 2019.

Perché usare le evidenze scientifiche è importante?



Dakota Corbin

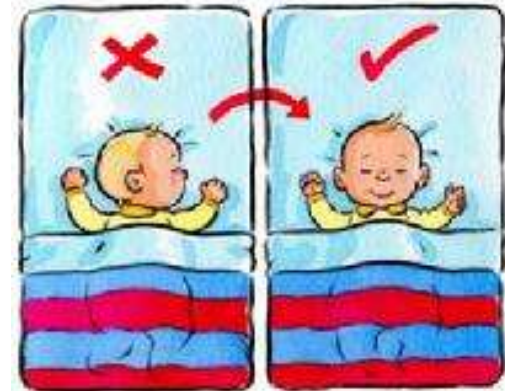
- La sindrome della morte infantile improvvisa (Sudden Infant Death Syndrome - SID) è diventata un'epidemia negli anni '60 e '70
- Al suo apice i bambini nei paesi ricchi morivano a un tasso di 1 su 250 nati



- All'inizio degli anni '80 in Inghilterra il dottor Peter Flemming iniziò a intervistare i genitori di bimbi morti e si rese conto che i bimbi avevano tutti qualcosa in comune con il sonno fronte in giù.
- È quindi stata condotta una ricerca dettagliata per dimostrare il collegamento
- MA è stata una lotta per convincere il Sistema sanitario a cambiare le sue indicazioni

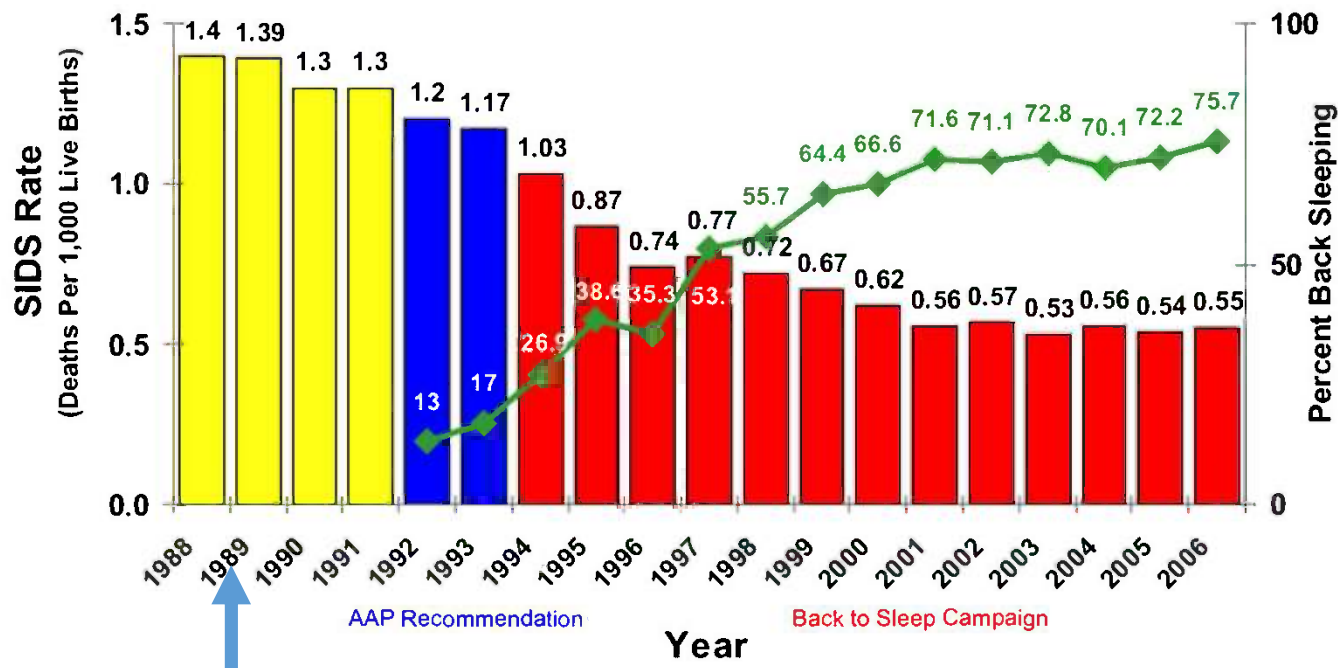


**Safe Sleep for
Your Baby**



Tasso di bimbi morti per SDI (barre) e frequenza dei bimbi che dormivano a schiena in giù (linea verde)

SIDS Rate and Back Sleeping (1988 – 2006)



A seguito di queste nuove raccomandazioni, la morte per SID è scesa da 1 su 250 a 1 su 3000

SIDS Rate Source: CDC, National Center for Health Statistics,
Sleep Position Data: NICHD, National Infant Sleep Position Study.

Il processo decisionale basato su evidenze

- facilita la raccolta sistematica e la sintesi delle evidenze scientifiche e aumenta la qualità delle evidenze disponibili per le decisioni
- riduce i pregiudizi e la selezione opportunistica dei risultati
- aumenta la trasparenza delle decisioni
- aumenta l'efficacia della gestione
- aiuta a identificare le lacune conoscitive

THE ROCK CARLING FELLOWSHIP

1971

EFFECTIVENESS AND EFFICIENCY

RANDOM REFLECTIONS ON
HEALTH SERVICES

A. L. Cochrane

CBE, FRCP

*Director
MRC Epidemiology Unit
Cardiff*

THE NUFFIELD
PROVINCIAL HOSPITALS TRUST

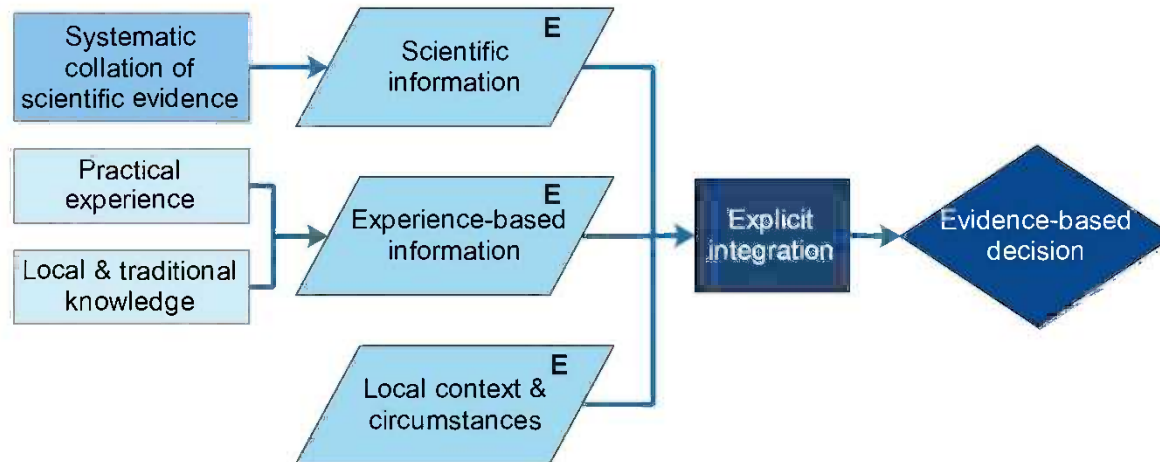
1972

(Sutherland *et al.* 2004)

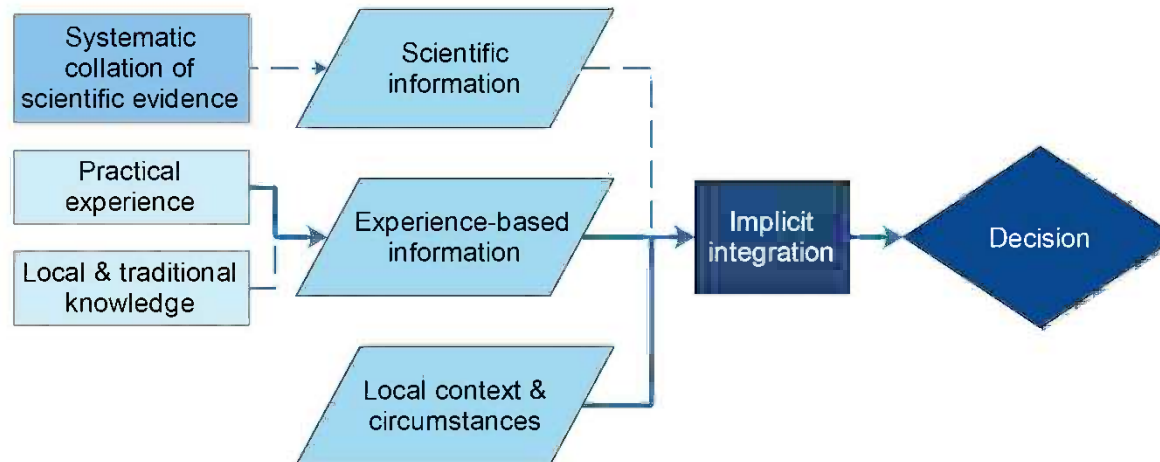
Ma cos'altro dobbiamo considerare nel processo decisionale?

- Conoscenza locale
- Saperi delle popolazioni indigene
- Conoscenza esperienziale e opinione degli esperti
- Valori e culture sociali
- Costi
- Risorse
- Fattibilità

a) Revised model for evidence-based conservation

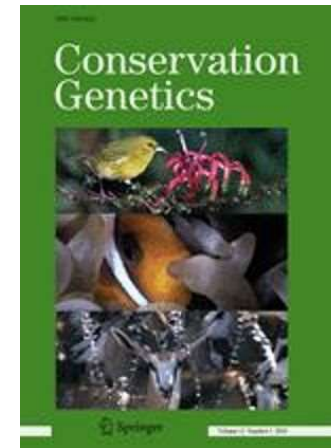
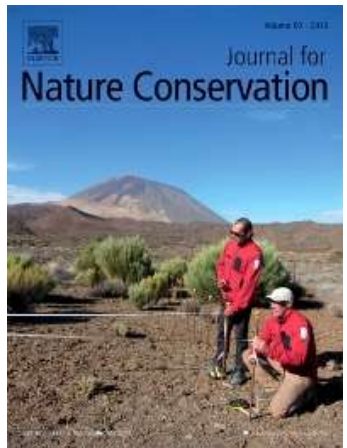
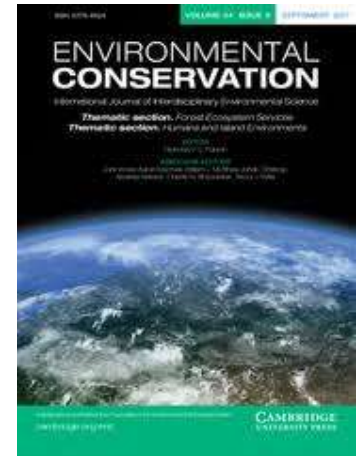


b) Model of current conservation practice



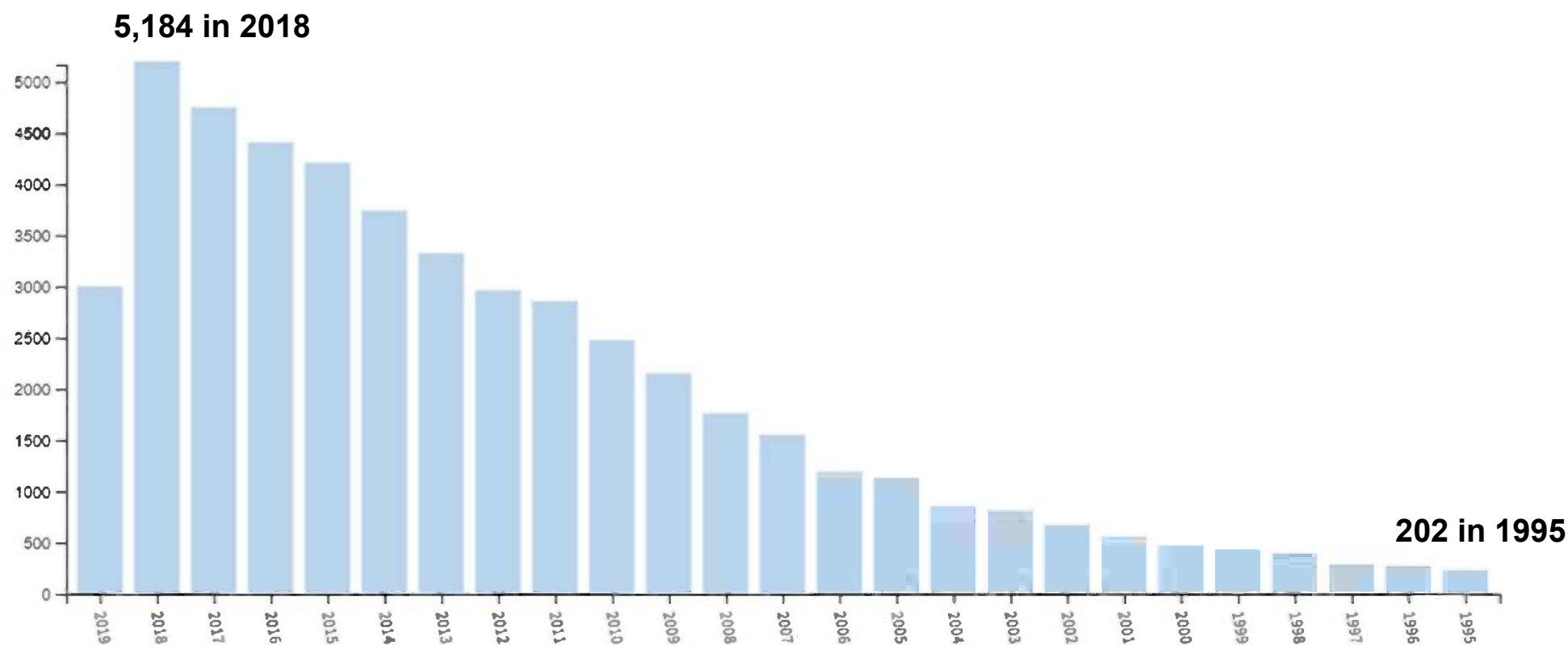
Evidenze scientifiche nella conservazione

Accumulo di evidenze scientifiche nella conservazione



Accumulo di evidenze scientifiche nella conservazione

Numero di studi presenti nel sito 'Web of Science' estratti con le parole chiave "biodiversità" e "conservazione" (in inglese)

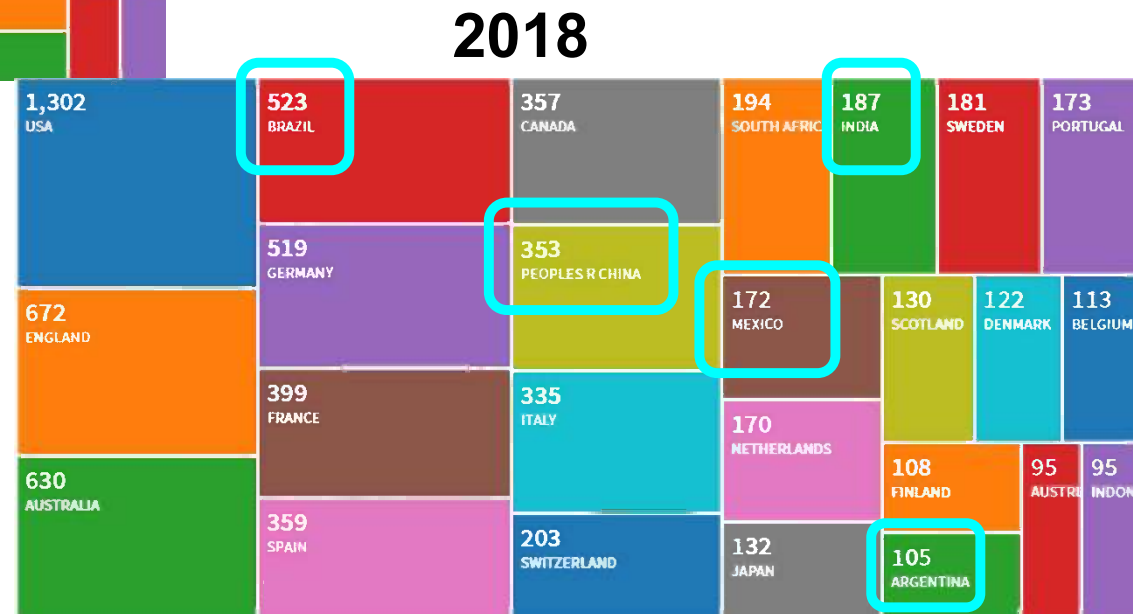


Accumulo di evidenze scientifiche nella conservazione



1995

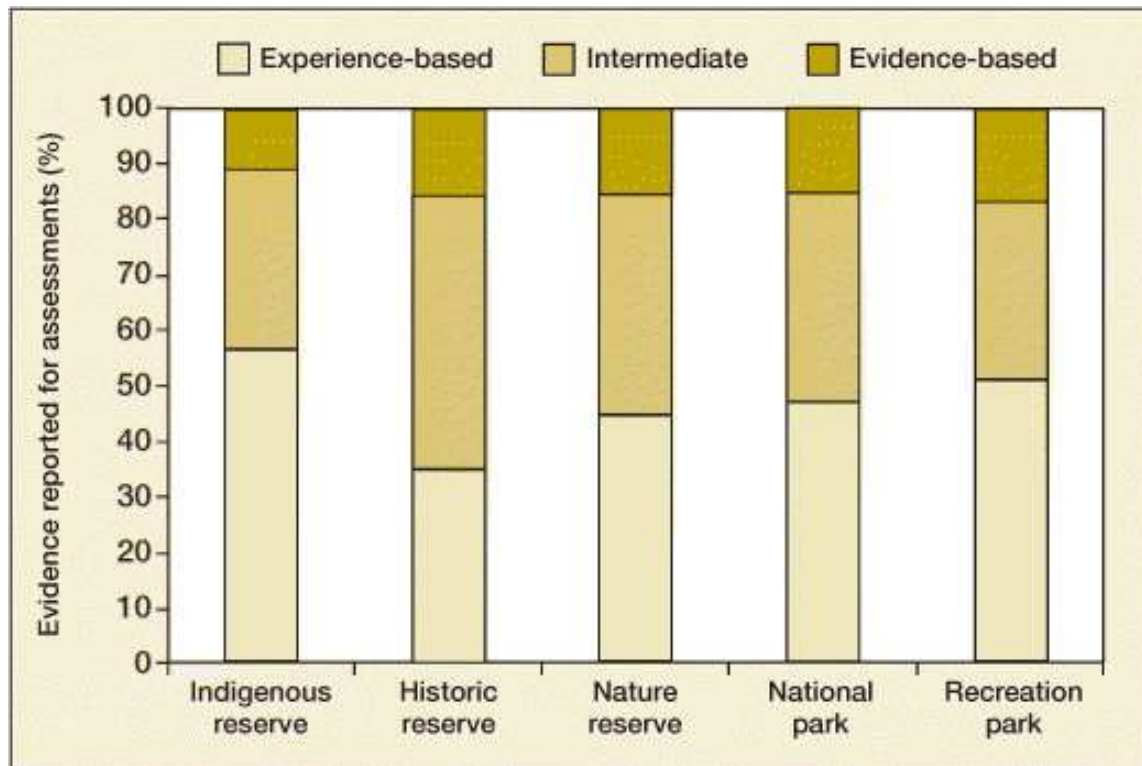
Numero di studi presenti nel sito 'Web of Science' estratti con le parole chiave "biodiversità" e "conservazione"



**La conoscenza accumulata è effettivamente
utilizzata per la conservazione?**



Manca di evidenze scientifiche utilizzate nelle decisioni



Fonti di informazione dei professionisti che lavorano nella conservazione

L'interfaccia ricerca-pratica

Solo il **33%** degli 88 articoli scientifici che valutano interventi di conservazione tra il 1998 e il 2002 hanno portato all'attuazione di alcune azioni (Knight et al 2008 Cons Biol)

Solo il **23%** dei responsabili ha utilizzato documenti scientifici durante la compilazione dei piani di gestione delle riserve naturali nel Regno Unito (Pullin et al 2004 Biol Conserv)

Solo il **10%** delle decisioni prese nel campo della gestione finalizzata alla conservazione in Australia utilizza evidenze scientifiche (Cook et al 2010 Front Ecol Environ)

Circa il **66%** dei gestori delle risorse naturali in California utilizza riviste sottoposte a revisione tra pari per ottenere informazioni sulle invasioni di piante (Matzek et al 2014 Cons Lett)

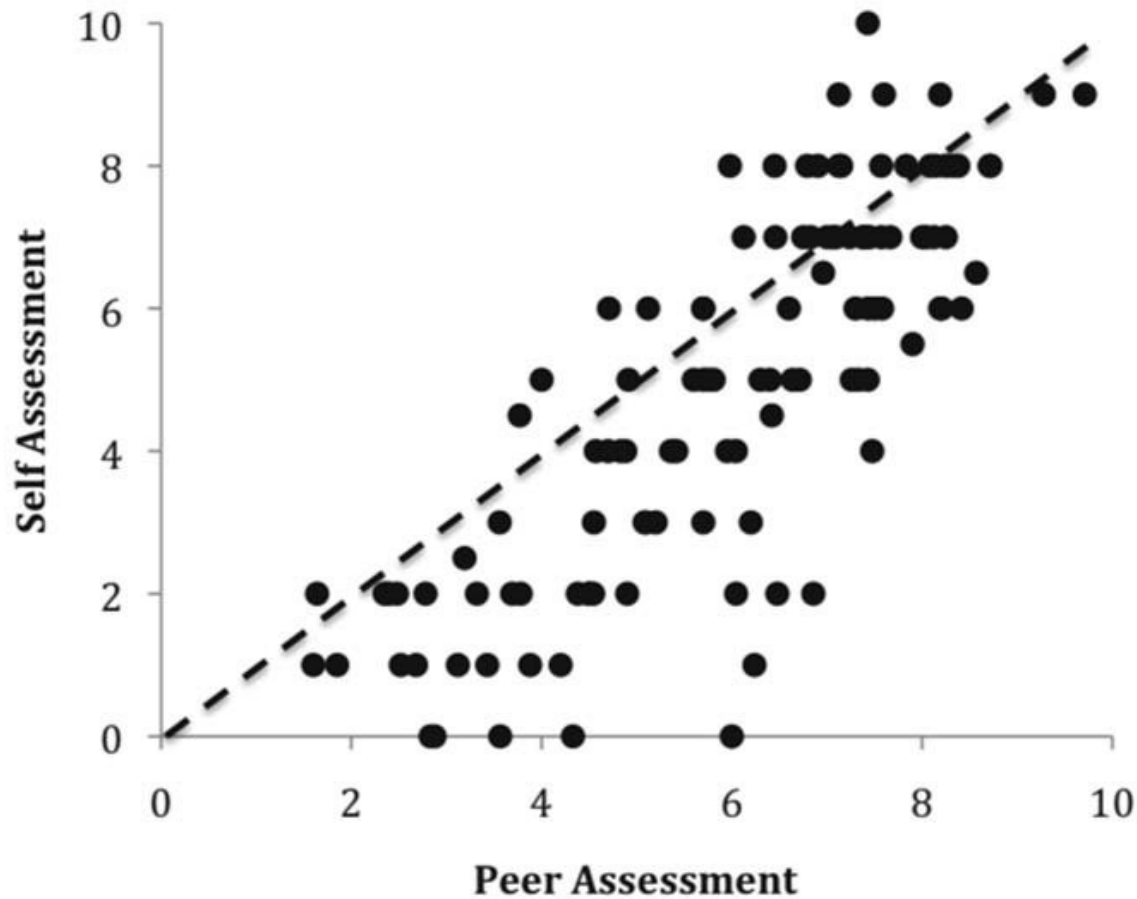
La letteratura scientifica costituisce solo il **2,4%** delle fonti di informazione utilizzate dai professionisti della conservazione a Broadland, nel Regno Unito (Sutherland et al 2004 TREE)

Solo il **20%** dei professionisti della conservazione in Svizzera utilizza riviste scientifiche internazionali per il proprio processo decisionale (Fabian et al 2019 Biol Conserv)

Perché è importante utilizzare le evidenze scientifiche?

- Aumenta la qualità delle prove disponibili per le decisioni
- Riduce i pregiudizi e la scelta opportunistica dei risultati
- Aumenta la trasparenza delle decisioni
- Aumenta l'efficacia della gestione
- Identifica le lacune nella conoscenza

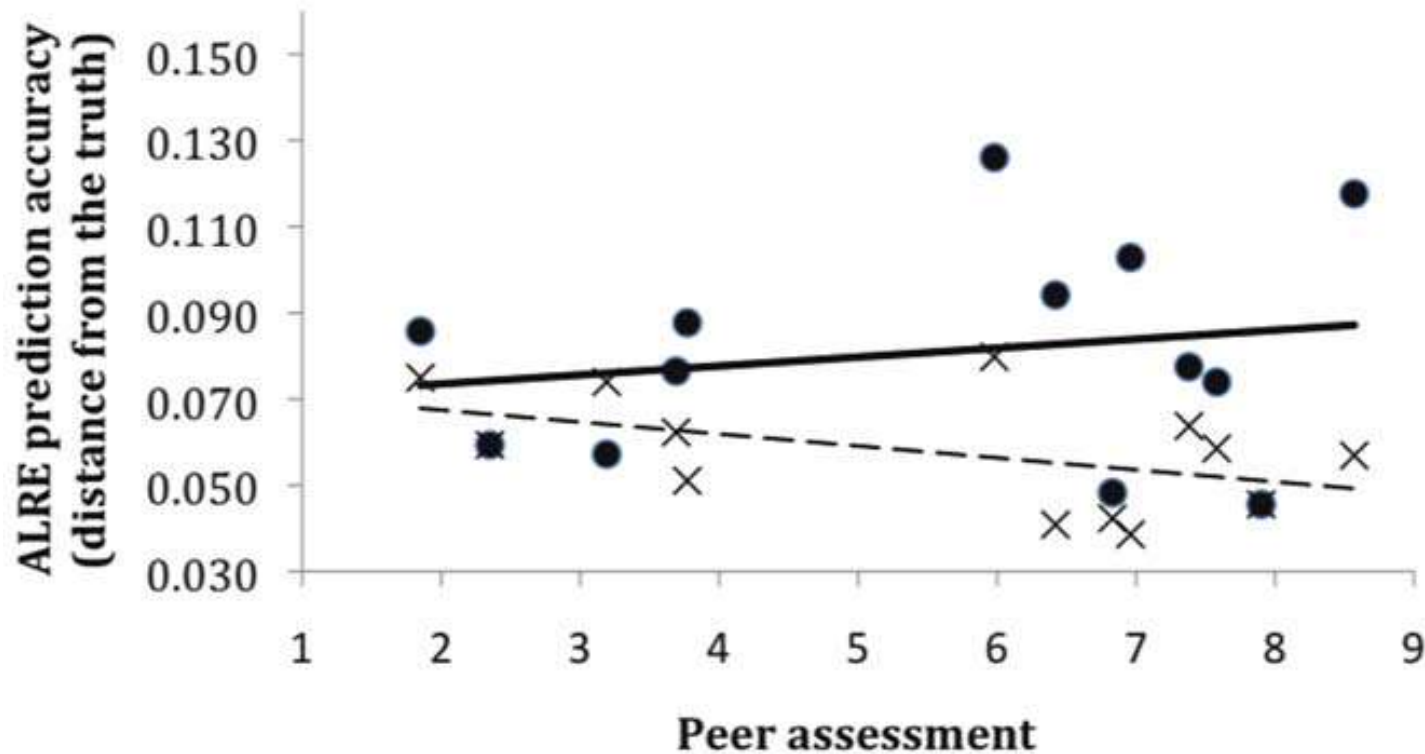
Ma perché non possiamo semplicemente chiedere agli esperti?



Classificazione coerente tra
l'autovalutazione delle competenze
possedute da esperti e la valutazione
da parte dei loro colleghi

Burgman et al.

Autovalutazione contro valutazione tra pari delle competenze. Dati di tutti i workshop (correlazione complessiva, $r = 0,85$). La valutazione tra pari è la media dei punteggi su una scala di 11 punti fornita dai colleghi di ogni persona il giorno del workshop. La forte correlazione era coerente tra i cinque gruppi, dove le correlazioni andavano da 0,67 a 0,94. La linea tratteggiata è la parità (dove autovalutazione e valutazione tra pari sono uguali).



MA nessuna correlazione
tra valutazioni e
prestazioni!

Figura 2. Valutazione tra pari della conoscenza degli esperti rispetto alle prestazioni effettive. L'accuratezza della previsione è calcolata come ALRE (vedere Burgman et al 2011). Valori piccoli per l'accuratezza della previsione sono migliori. I cerchi chiusi e la linea continua sono stime della prima prova ($r = 0,19$). Le croci e la linea tratteggiata sono stime della seconda prova ($r = 0,47$). Le stime più vicine all'asse x indicano che le risposte sono più vicine alla verità.

Perché è importante utilizzare le evidenze scientifiche



Ponti volanti per pipistrelli, utilizzati nel Regno Unito da oltre un decennio per un costo totale di circa 2,5 milioni di sterline per ridurre la mortalità dei pipistrelli sulle strade, sono noti per essere inefficaci ma sono ancora utilizzati

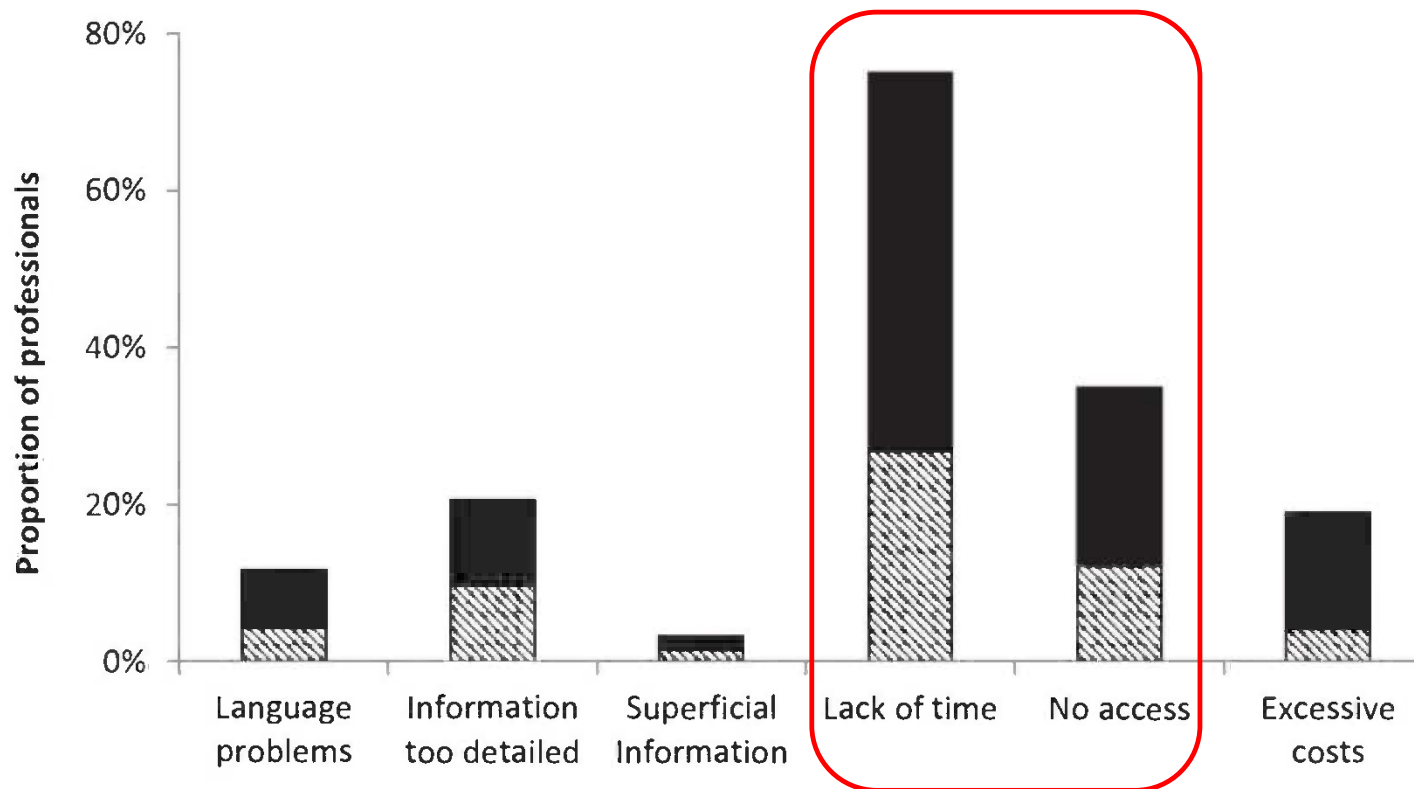
Nidi per uccelli installati a densità eccezionale nell'ambito della politica agricola comunitaria europea



Se sono importanti, perché non vengono utilizzate?

Perché le evidenze scientifiche non vengono utilizzate nella pratica?

Motivi per cui le riviste professionali non vengono lette dai professionisti della conservazione in Svizzera



A word cloud on a black background listing various barriers to research use in decision-making. The words are in different colors (white, green, blue) and sizes, indicating their relative frequency or importance. The most prominent words are 'poor organisational management and structure', 'lack of capacity and resources', 'lack of access to research', and 'no use of research in decision process'.

nature of issue
lack of skills to use research
science doesn't exist
practitioner characteristics
lack of access to research
culture of researchers
practitioners' attitudes about research
poor academic-practitioner relationships
context of scientific evidence
negative organisational culture
lack of capacity and resources
lack of awareness
poor organisational management and structure
high demand to publish
researchers' attitudes
no use of research in decision process
difficult to implement
negative stakeholders' attitudes and beliefs
poor practitioner-stakeholder relationships
social, political and economic context
lack of support for advisors
poor manager-advisor relationships
culture of practitioners
poor quality evidence
lack of skills to communicate research
research not relevant or applicable
lack of engagements with wider community
reluctant or inexperienced decision maker

A word cloud on a black background listing various barriers to research use. The words are in different colors (white, green, blue) and sizes. Five items are highlighted with orange rectangular boxes: 'lack of capacity and resources', 'poor organisational management and structure', 'no use of research in decision process', 'social, political and economic context', and 'poor quality evidence'. Other visible terms include 'nature of issue', 'lack of skills to use research', 'lack of access to research', 'practitioner characteristics', 'poor academic-practitioner relationships', 'culture of researchers', 'practitioners' attitudes about research', 'context of scientific evidence', 'negative organisational culture', 'lack of awareness', 'high demand to publish', 'researchers' attitudes', 'difficult to implement', 'negative stakeholders' attitudes and beliefs', 'poor practitioner-stakeholder relationships', 'lack of support for advisors', 'culture of practitioners', 'research not relevant or applicable', 'poor manager-advisor relationships', 'lack of skills to communicate research', 'lack of engagements with wider community', and 'reluctant or inexperienced decision maker'.

nature of issue

lack of skills to use research

science doesn't exist

lack of access to research

culture of researchers

practitioner characteristics

practitioners' attitudes about research

poor academic-practitioner relationships

context of scientific evidence

negative organisational culture

lack of capacity and resources

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high demand to publish

researchers' attitudes

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poor practitioner-stakeholder relationships

social, political and economic context

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culture of practitioners

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lack of skills to communicate research

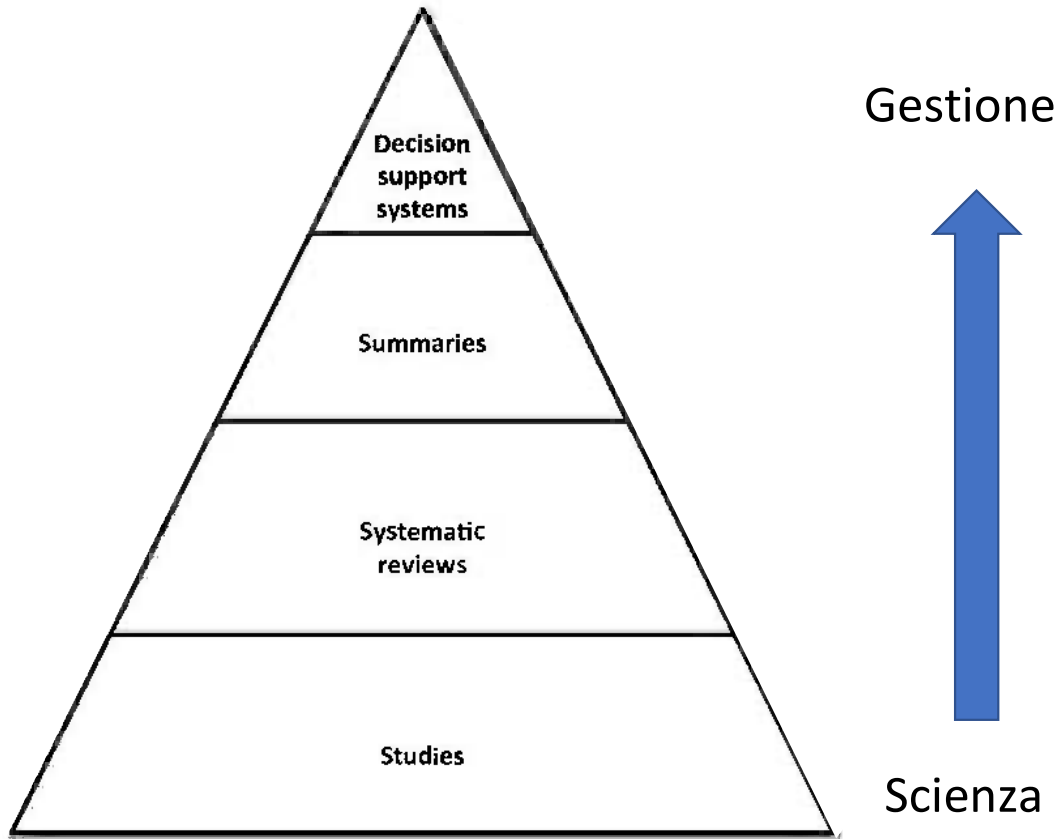
lack of engagements with wider community

reluctant or inexperienced decision maker

Una soluzione per migliorare l'uso della ricerca

Organizzazione delle evidenze scientifiche utilizzando la piramide "4S" delle evidenze

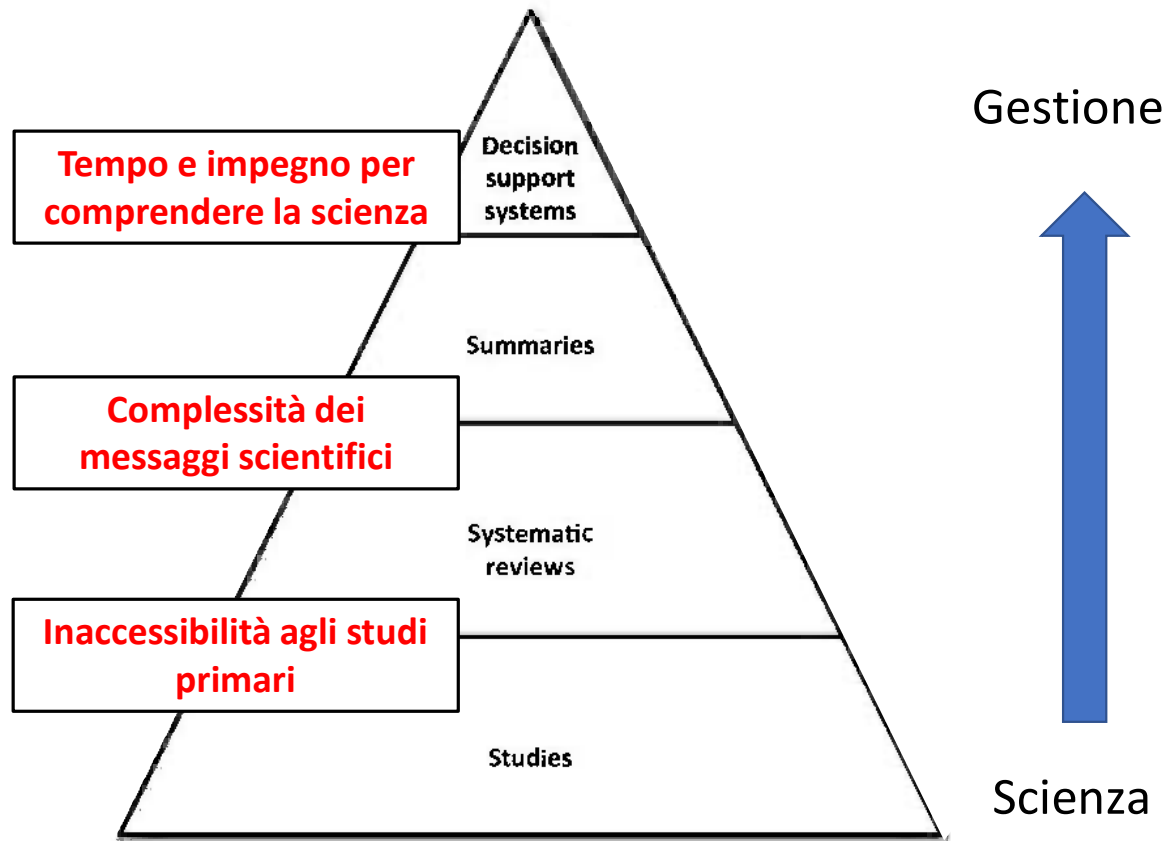
Dicks et al. 2014 TREE



Una soluzione per migliorare l'uso della ricerca

Organizzazione delle evidenze scientifiche utilizzando la piramide "4S" delle evidenze

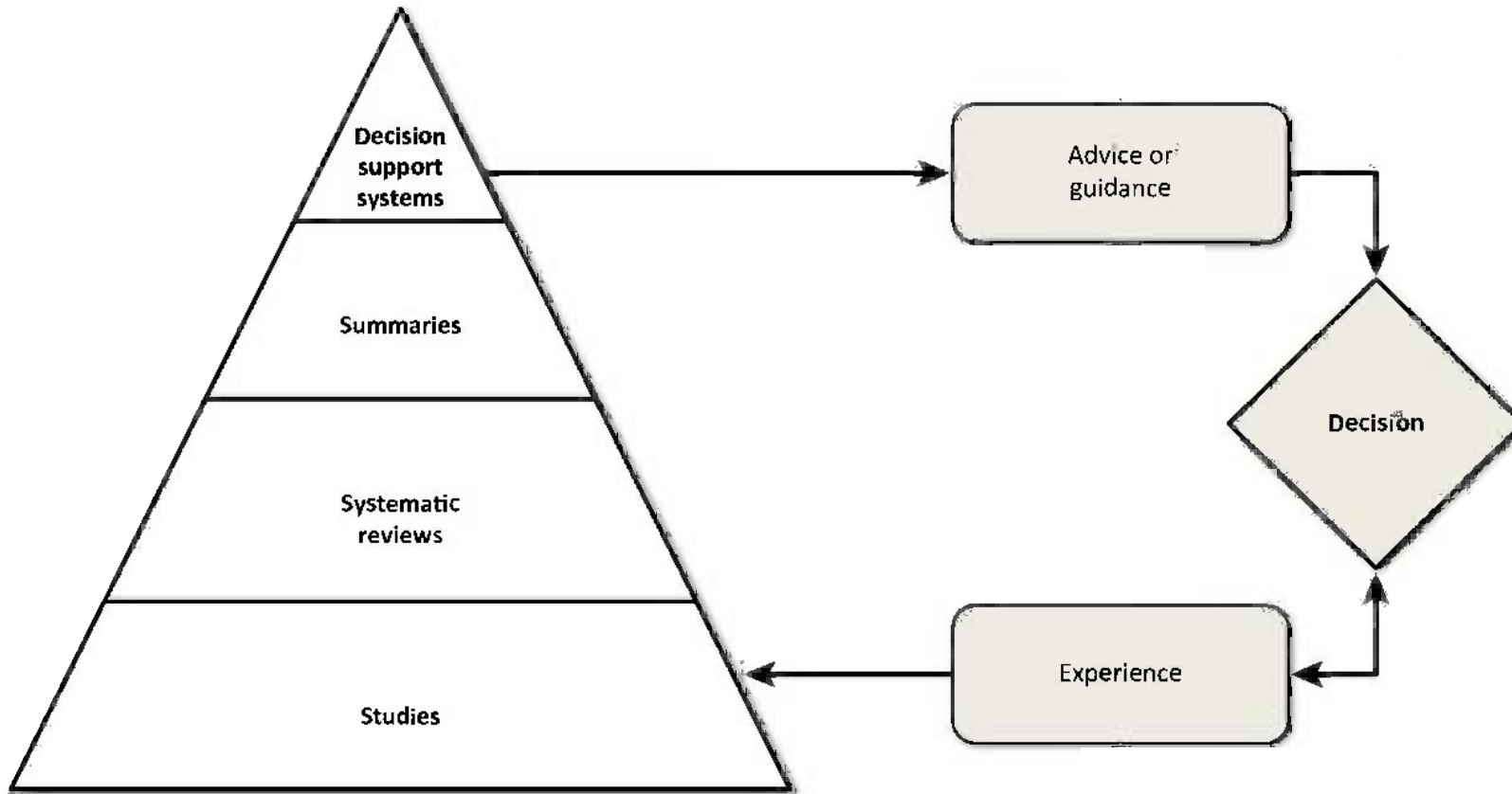
Dicks et al. 2014 TREE



Una soluzione per migliorare l'uso della ricerca

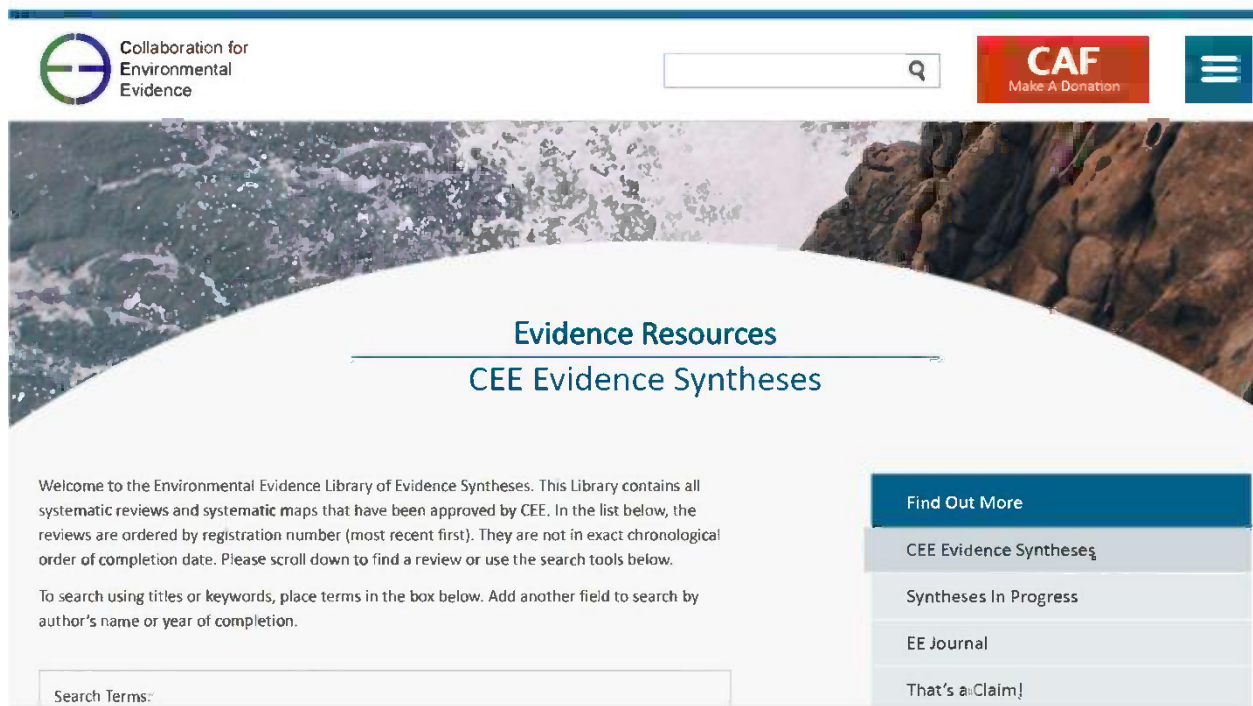
Organizzazione delle evidenze scientifiche utilizzando la piramide "4S" delle evidenze

Dicks et al. 2014 TREE



Revisione sistematica (Systematic review)

Una revisione sistematica raccoglie, valuta criticamente e sintetizza tutte le evidenze disponibili relative a una domanda scientifica. I revisori utilizzano metodi predefiniti per ridurre gli errori al minimo e quindi fornire risultati più affidabili che potrebbero informare il processo decisionale



The screenshot shows the homepage of the Collaboration for Environmental Evidence (CEE) Evidence Syntheses website. The header includes the CEE logo, a search bar, a 'CAF Make A Donation' button, and a menu icon. The main content area features a large image of a rocky coastline with the text 'Evidence Resources' and 'CEE Evidence Syntheses'. Below this, a welcome message explains the library's purpose and provides instructions on how to search. A search bar is located at the bottom left. On the right side, there is a 'Find Out More' section with links to 'CEE Evidence Syntheses', 'Syntheses In Progress', 'EE Journal', and 'That's a Claim!'.

Collaboration for Environmental Evidence

CAF Make A Donation

Evidence Resources

CEE Evidence Syntheses

Welcome to the Environmental Evidence Library of Evidence Syntheses. This Library contains all systematic reviews and systematic maps that have been approved by CEE. In the list below, the reviews are ordered by registration number (most recent first). They are not in exact chronological order of completion date. Please scroll down to find a review or use the search tools below.

To search using titles or keywords, place terms in the box below. Add another field to search by author's name or year of completion.

Search Terms:

Find Out More

- CEE Evidence Syntheses
- Syntheses In Progress
- EE Journal
- That's a Claim!

Revisione sistematica: un esempio

Jakobsson et al. *Environ Evid* (2018) 7:17
<https://doi.org/10.1186/s13750-018-0129-z>

Environmental Evidence

SYSTEMATIC REVIEW

Open Access



How does roadside vegetation management affect the diversity of vascular plants and invertebrates? A systematic review

Simon Jakobsson^{1*} , Claes Bernes², James M. Bullock³, Kris Verheyen⁴ and Regina Lindborg¹

Revisione sistematica: un esempio

Primary question

How does roadside maintenance and restoration implementing non-chemical vegetation removal affect the diversity of vascular plants and invertebrates?

Components of the primary question

Population: roadside habitats and the species of vascular plants and invertebrates found within them.

Intervention: maintenance or restoration of roadside habitats based on non-chemical vegetation removal such as mowing, grazing, burning, clearance of shrubs and saplings, coppicing, pruning, or mechanical removal of invasive plants.

Comparator: non-intervention or alternative forms of the interventions.

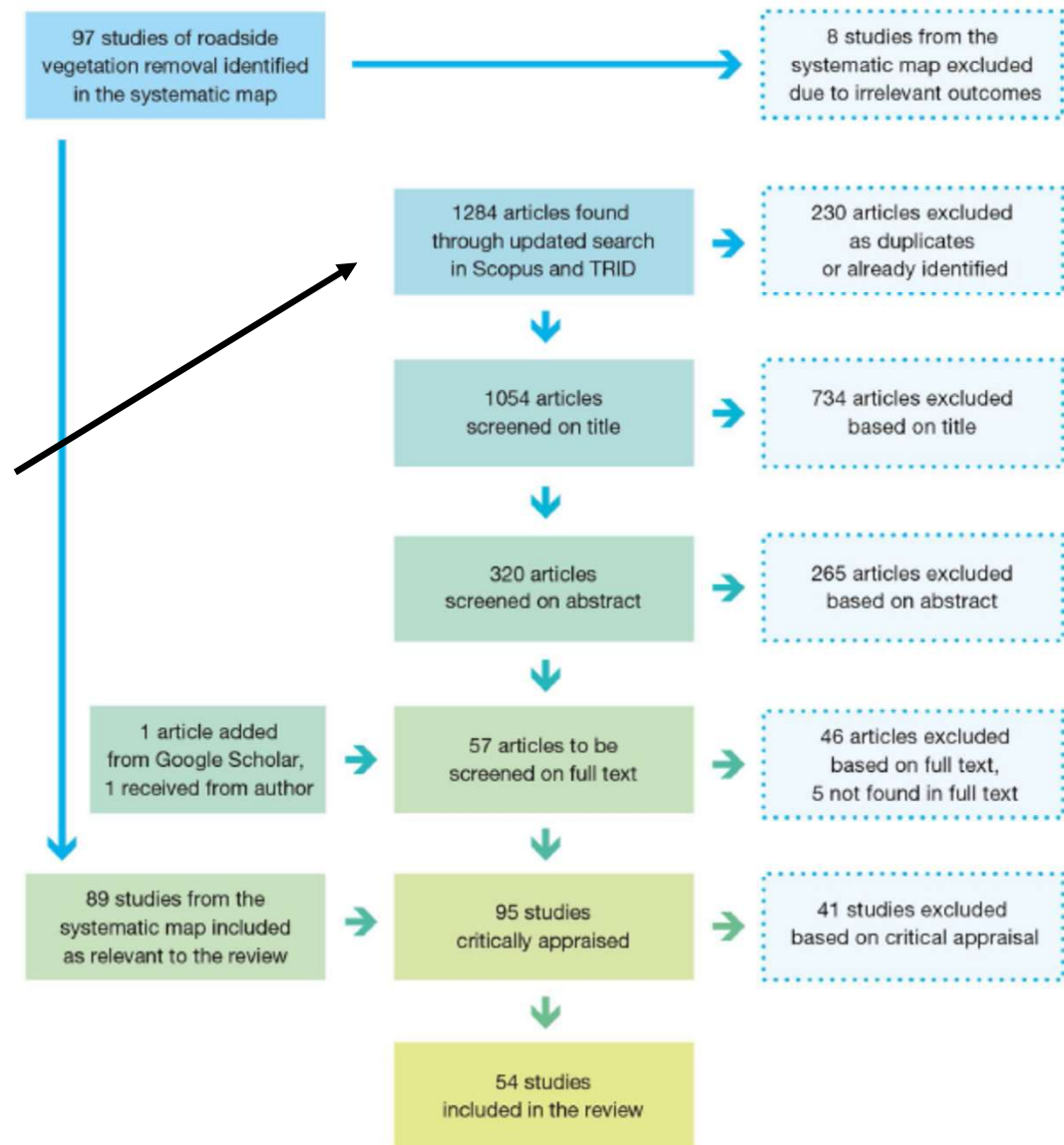
Outcomes: measures of functional/taxonomic diversity (including abundance) of vascular plants or invertebrates.



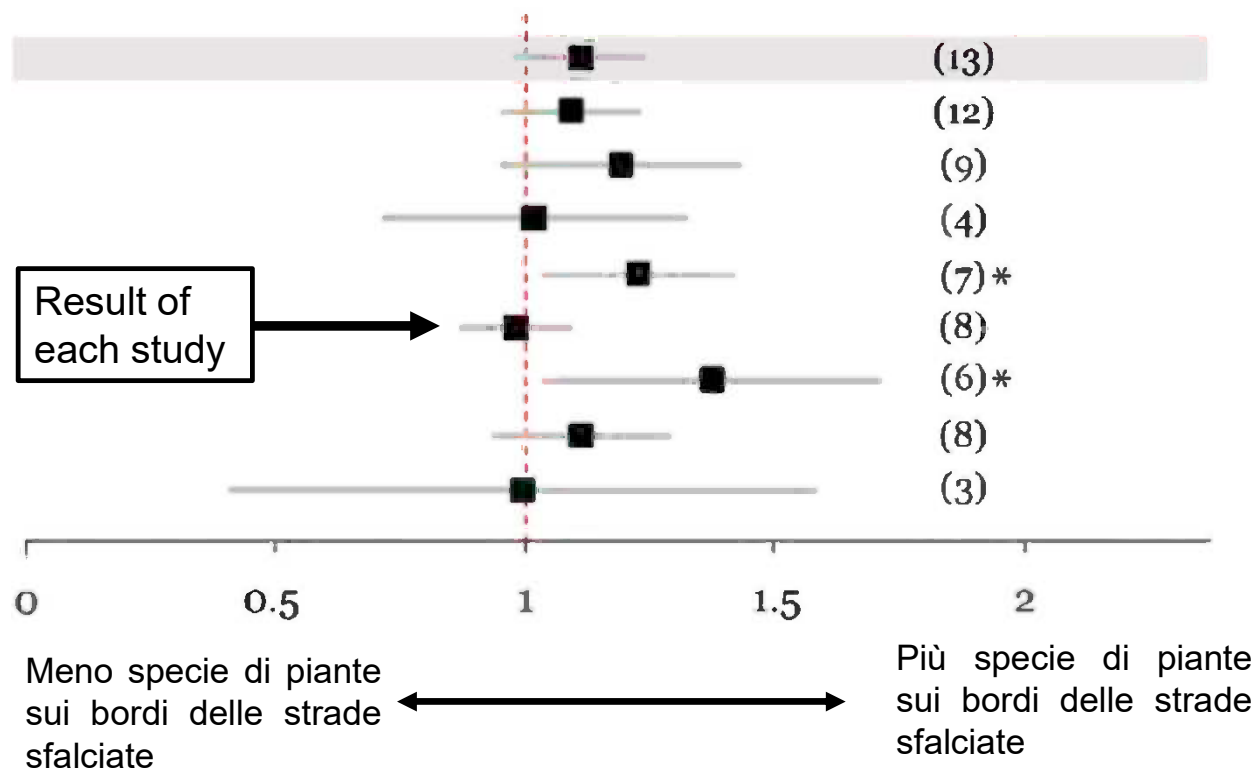
Revisione sistematica: un esempio

Population: roadside*, “road side*”, (road* AND (verge* OR edge*)), roundabout*, “traffic island*”, “median strip*”, “central reservation*”, boulevard*, parkway*, (avenue* AND tree*).

Outcomes: *diversity, species, abundance, vegetation.



Revisione sistematica: un esempio



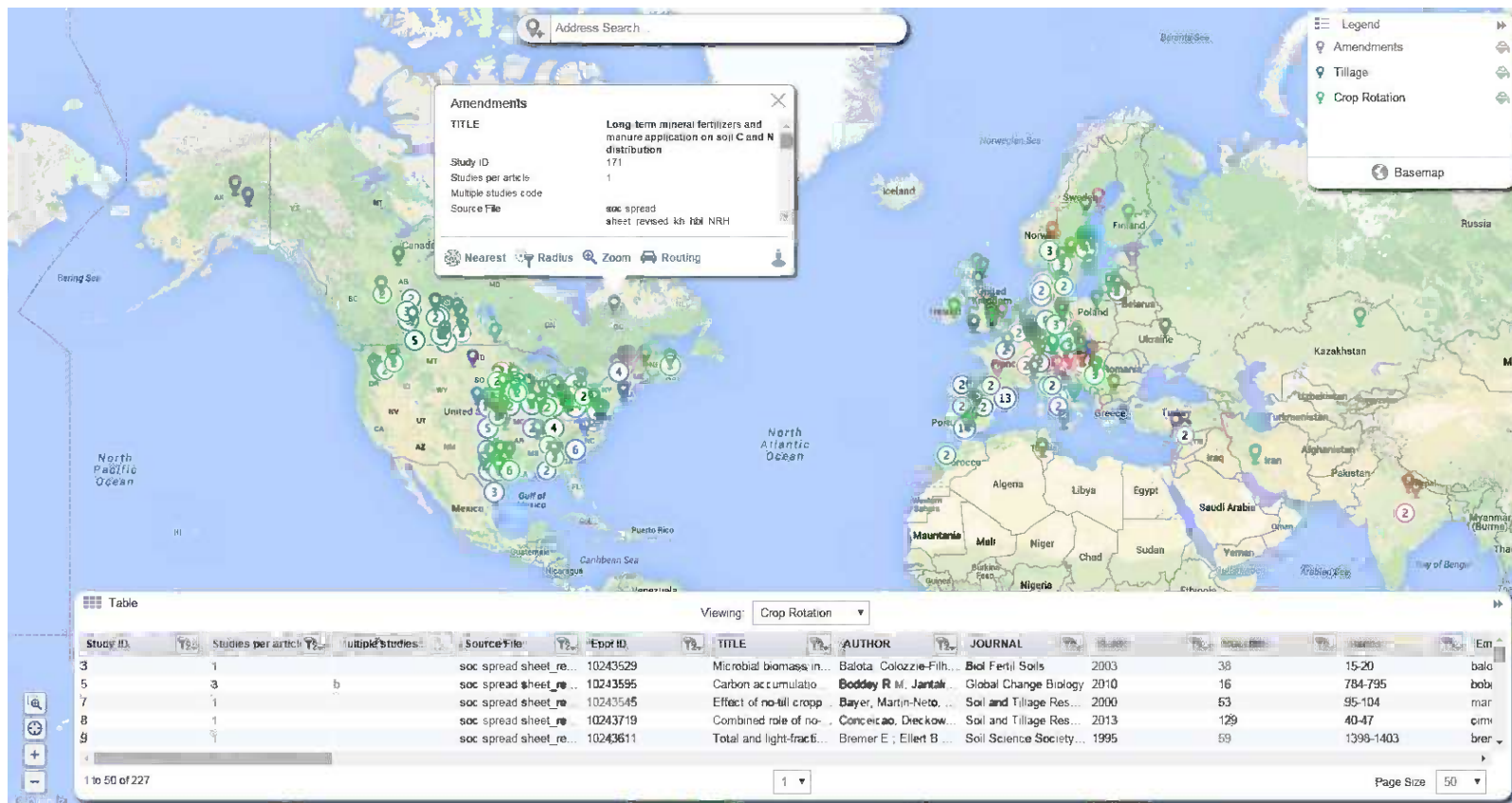
Gli effetti della sfalcatura dipendevano dall'interazione tra la frequenza di sfalcatura e la rimozione del fieno.

Quindi, non ci sono stati effetti complessivi statisticamente significativi della sfalcatura rispetto all'assenza di sfalcatura.

Mappatura sistematica

- Molto simile metodologicamente alla revisione sistematica, ma mira a identificare quale ricerca è stata condotta su un argomento
- Descrive la natura delle evidenze
- Punto di partenza per una rapida conduzione di più revisioni sistematiche
- Principali uscite:
 - Database interattivo che descrive gli studi
 - Visualizzazioni / narrativa che descrivono le evidenze: mappe di calore, atlanti delle evidenze

Esempio di mappa sistematica



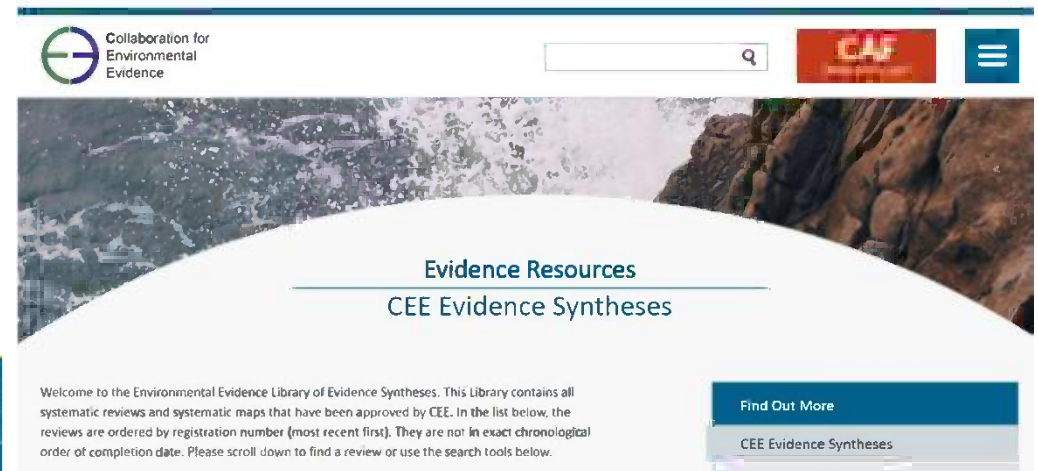
Haddaway, N.R., Hedlund, K., Jackson, L.E. *et al.* What are the effects of agricultural management on soil organic carbon in boreo-temperate systems?. *Environ Evid* 4, 23 (2015). <https://doi.org/10.1186/s13750-015-0049-0>

Collaborazione per le evidenze in campo ambientale (CEE)

- La CEE coordina la guida metodologica e la pubblicazione di revisioni sistematiche rigorose e mappe sistematiche (protocolli inclusi)
- I lavori si basano su trasparenza, completezza, oggettività procedurale



The Cochrane Collaboration



Conservation Evidence project

Conservation Evidence

Providing evidence to improve practice

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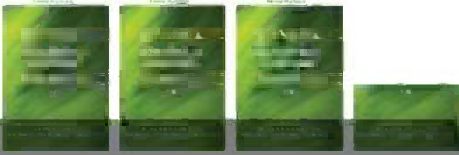
Conservation Evidence in numbers

Over 600,000 scientific papers scanned



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Over 34,000 downloads of 'What Works in Conservation'



Over 1.25 million webpage views of www.conservationevidence.com



Browse by category:

 Amphibian Conservation 129 Actions	 Bat Conservation 190 Actions	 Bee Conservation 59 Actions
 Bird Conservation 454 Actions	 Control of Freshwater Invasive Species 119 Actions	 Farmland Conservation 119 Actions

See more

<https://www.conservationevidence.com/>

Conservation Evidence project

Actions

Can't find what you're looking for? [You can also search Individual Studies.](#)

Not sure what Actions are? [Read a brief description.](#)

Refine results

454 actions found

Sort by: Number of studies ▲ Relevance Title

Category

☒ Bird Conservation (454)

Keywords

Habitat

☐ Artificial Habitats

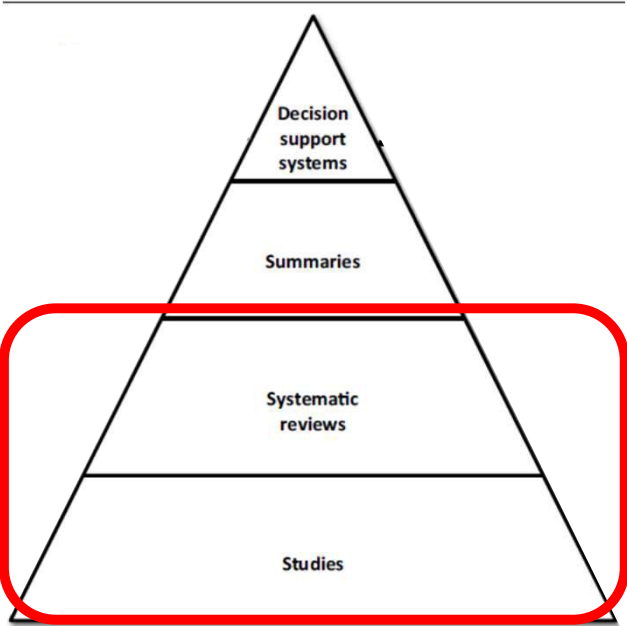
☐ Forest & Woodland

☐ Coastal

More ▼

Threat

☐ Provide artificial nesting sites for songbirds	Beneficial Based on: 65 studies	
☐ Plant wild bird seed or cover mixture	Beneficial Based on: 40 studies	
☐ Provide supplementary food for songbirds to increase reproductive success	Likely to be beneficial Based on: 37 studies	
☐ Provide supplementary food for songbirds to increase adult survival	Beneficial Based on: 34 studies	
☐ Pay farmers to cover the costs of bird conservation measures	Likely to be beneficial Based on: 30 studies	



<https://www.conservationevidence.com/data/studies?path=data%2Findex&terms=>

Conservation Evidence project

Supporting evidence from individual studies

1 

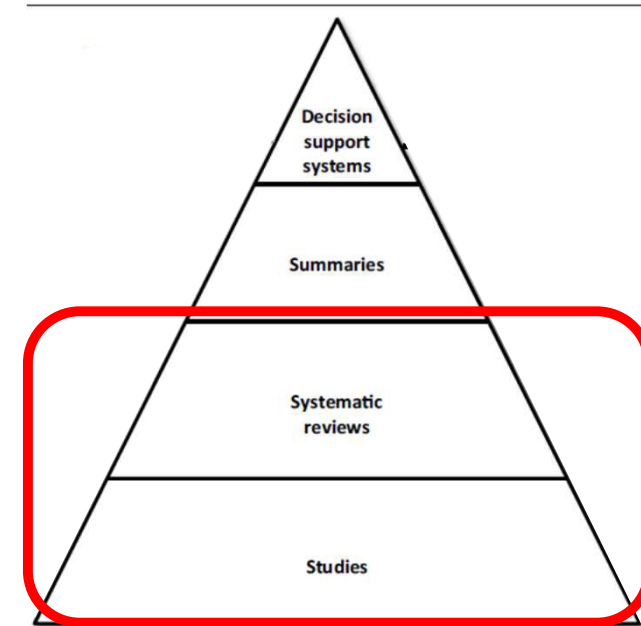
A replicated study in 1945-6 in garden habitats in Ohio, USA (Calhoun 1948), found that American robins *Turdus migratorius* nesting in artificial nests had lower success rates than those natural nests (33% success for 24 nesting attempts in artificial nests vs. 50% of 48 in natural nests). Fourteen pairs of robins used the nests, but only seven successfully raised chicks. Nests consisted of cones of black or green roofing paper 17.8 cm at the widest and 5.1 cm deep. This study also examines nest use by mourning doves *Zenaidura macroura* (formerly *Zenaidura macroura*), and the effect of different coloured nests in 'Use differently-coloured artificial nests'.

2 

A controlled study in mixed farmland in north-east Scotland in 1971 (Yom-Tov 1974) found that carrion crows *Corvus corone* did not nest in artificial trees, irrespective of whether they were provided with supplementary food or not. In one experiment, a line of 15 artificial trees (3-6 m branches tied to fence posts and provided with an old crow's nest) were set up, approximately 70 m apart. Two pairs of crows established territories, but neither attempted to breed. A second experiment provided a single artificial tree in two occupied territories, 70 m from the tree used by the resident pair. Neither artificial tree was used, as the resident pairs successfully defended their territories. This study also investigated the effects of supplementary feeding on crow reproduction, discussed in 'Provide supplementary food to increase reproductive success'.

3 

A small study in 1976-9 in three scrub and grassland habitats in Idaho, USA (Howard & Hilliard 1980), found that common ravens *Corvus corax* nested on nesting platforms provided, with four pairs using them in 1976, but only a single attempt in 1979. An average of 2.8 chicks/nest were produced. Twenty four platforms were provided in shaded/un-shaded pairs, with 23 out of 29 young fledged from shaded platforms. This study also discusses platform use by ferruginous hawks *Buteo regalis*, discussed in



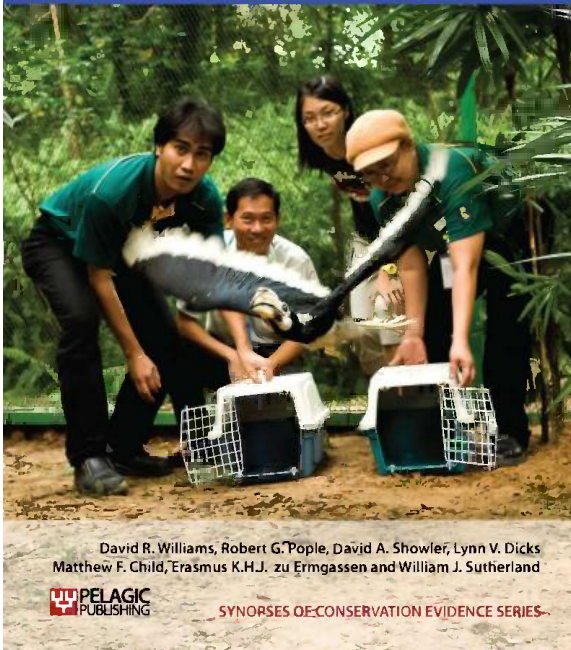
<https://www.conservationevidence.com/actions/498>

Conservation Evidence project

Synopses (Sinossi)

Bird Conservation

Global evidence for the effects of interventions



David R. Williams, Robert G. Pople, David A. Showler, Lynn V. Dicks
Matthew F. Child, Erasmus K.H.J. zu Ermgassen and William J. Sutherland

PELAGIC
PUBLISHING

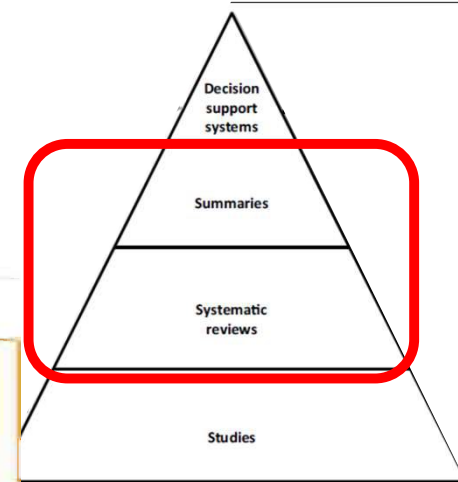
SYNOPSIS OF CONSERVATION EVIDENCE SERIES

Action: Provide artificial nesting sites for songbirds

Azione: fornire nidi artificiali per uccelli

Key messages Read our guidance on Key messages before continuing

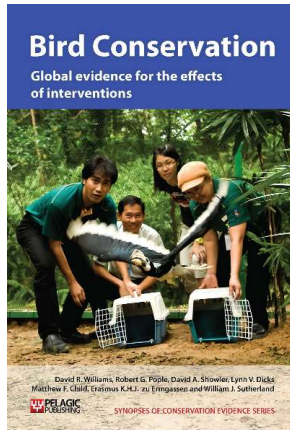
- Only three studies out of 66 from across the world found low rates of nest box occupancy, although this may be partially the result of publishing biases. Thrushes, crows, swallows and New World warblers were the target species with low rates of use. Thrushes, crows, finches, swallows, wrens, tits, Old World and tyrant flycatchers, New World blackbirds, sparrows, waxbills, starlings and ovenbirds all used nest boxes. One study from the USA found that wrens used nest boxes more frequently than natural cavities.
- Five studies from across the world found higher population densities or population growth rates in areas with nest boxes, whilst one study from the USA found higher species richness in areas with nest boxes. One study from Chile found that breeding populations (but not non-breeding populations) were higher for two species when nest boxes were provided.
- Twelve studies from across the world found that productivity of birds in nest boxes was higher or similar to those in natural nests. One study found there were more nesting attempts in areas with more nest boxes, although a study from Canada found no differences in behaviour or productivity between areas with high or low densities of nest boxes. Two studies from Europe found lower predation of some species using nest boxes. However, three studies from the USA found low production in nest boxes, either in absolute terms or relative to natural nests.
- Thirteen studies from across the world found that use, productivity or usurpation varied with nest box design, whilst seven found no difference in occupation rates or success with different designs.
- Similarly, fourteen studies found different occupation or success rates depending on the position or orientation of artificial nest sites. Two studies found no difference in success with different positions.



<https://www.conservationevidence.com/actions/498>

Conservation Evidence project

454 azioni



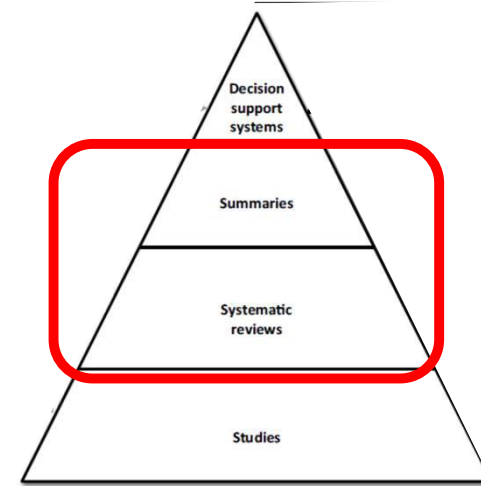
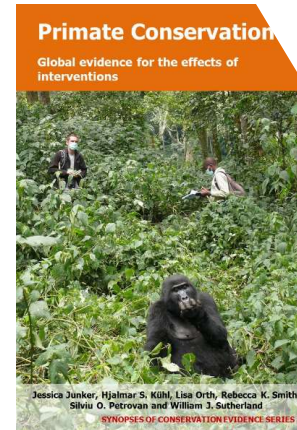
129 azioni



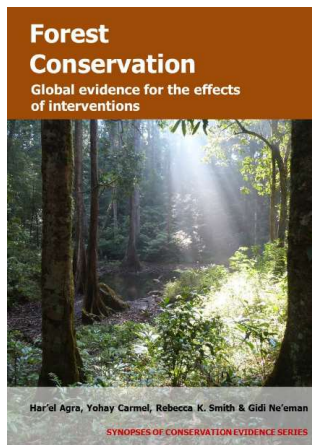
190 azioni



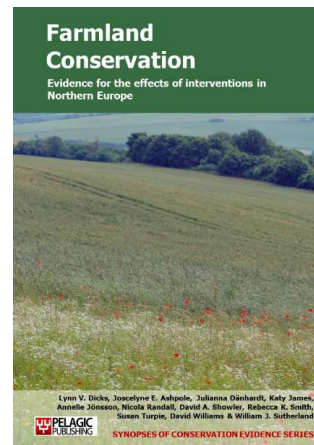
162 azioni



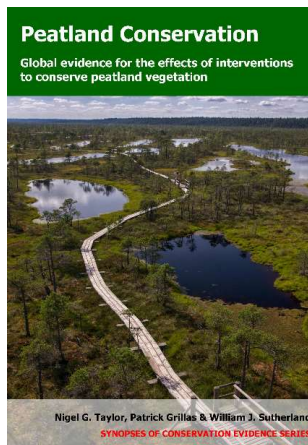
122 azioni



119 azioni



125 azioni



161 azioni



... con l'obiettivo di coprire le azioni per tutti gli habitat e i taxa entro quattro anni

Conservation Evidence project

Azione: fornire nidi artificiali per uccelli
 66 studies providing evidence

Supporting evidence from individual studies

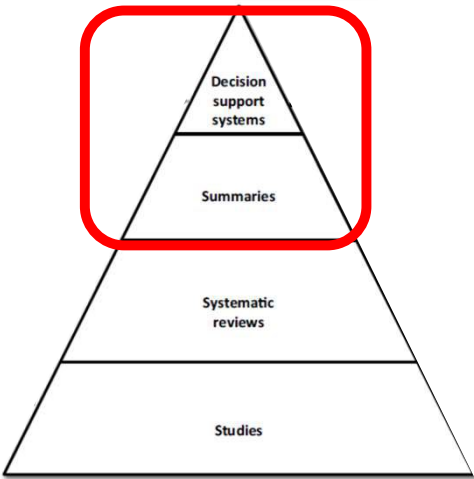
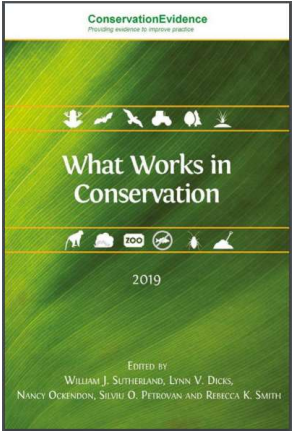
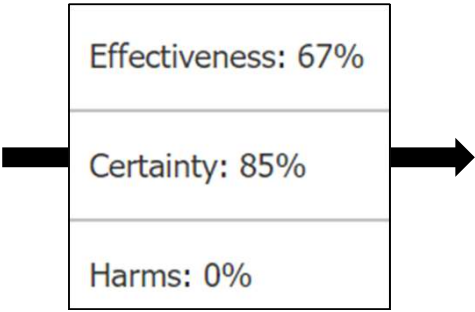
- 1

A replicated study in 1945-6 in garden habitats in Ohio, USA (Calhoun 1948), found that American robins *Turdus migratorius* nesting in artificial nests had lower success rates than those natural nests (33% success for 24 nesting attempts in artificial nests vs. 50% of 48 in natural nests). Fourteen pairs of robins used the nests, but only seven successfully raised chicks. Nests consisted of cones of black or green roofing paper 17.8 cm at the widest and 5.1 cm deep. This study also examines nest use by mourning doves *Zenaidura macroura* (formerly *Zenaidura macroura*), and the effect of different coloured nests in 'Use differently-coloured artificial nests'.
- 2

A controlled study in mixed farmland in north-east Scotland in 1971 (Yom-Tov 1974) found that carrion crows *Corvus corone* did not nest in artificial trees, irrespective of whether they were provided with supplementary food or not. In one experiment, a line of 15 artificial trees (3-6 m branches tied to fence posts and provided with an old crow's nest) were set up, approximately 70 m apart. Two pairs of crows established territories, but neither attempted to breed. A second experiment provided a single artificial tree in two occupied territories, 70 m from the tree used by the resident pair. Neither artificial tree was used, as the resident pairs successfully defended their territories. This study also investigated the effects of supplementary feeding on crow reproduction, discussed in 'Provide supplementary food to increase reproductive success'.
- 3

A small study in 1976-9 in three scrub and grassland habitats in Idaho, USA (Howard & Hilliard 1980), found that common ravens *Corvus corax* nested on nesting platforms provided, with four pairs using them in 1976, but only a single attempt in 1979. An average of 2.8 chicks/nest were produced. Twenty four platforms were provided in shaded/un-shaded pairs, with 23 out of 29 young fledged from shaded platforms. This study also discusses platform use by ferruginous hawks *Buteo borealis*, discussed in

Valutazione dell'esperto con il Metodo Delphi



Categories	Effectiveness score	Certainty score	Harms score
Beneficial	>60	>60	<20
Likely to be beneficial	>60	40 – 60	<20
OR	40 - 60	≥40	<20
Trade-offs between benefits & harms	≥40	≥40	≥20
Unknown effectiveness	Any score	<40	Any score
Unlikely to be beneficial	<40	40-60	<20
Likely to be ineffective or harmful	<40	>60	Any score
OR	<40	≥40	≥20

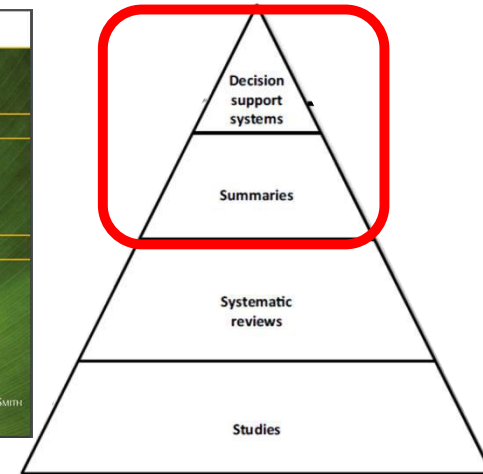
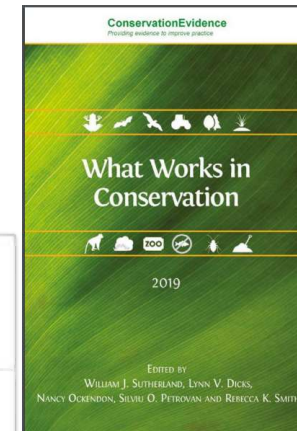
<https://www.conservationevidence.com/>

Conservation Evidence project

56 actions found

Sort by: Number of studies Relevance ▾ Title

☒	Provide artificial nesting sites for songbirds	Beneficial Based on: 65 studies	
☒	Provide artificial nesting sites for raptors	Likely to be beneficial Based on: 9 studies	
☒	Provide artificial nesting sites for woodpeckers	Unknown effectiveness (limited evidence) Based on: 11 studies	
☒	Use vocalisations to attract birds to safe areas	Likely to be beneficial Based on: 10 studies	
☒	Provide artificial nesting sites for wildfowl	Beneficial Based on: 27 studies	
☒	Provide supplementary food for songbirds to increase reproductive success	Likely to be beneficial Based on: 37 studies	



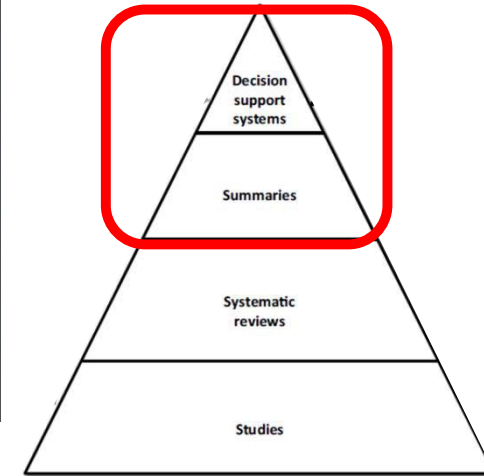
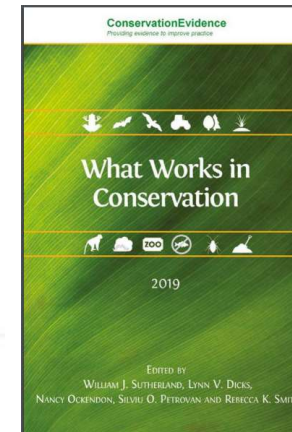
<https://www.conservationevidence.com/>

Conservation Evidence project

Actions

Can't find what you're looking for? You can also search [Individual Studies](#).

Not sure what Actions are? [Read a brief description](#).



Refine results

3 actions found

Sort by: Number of studies

Category

☒ Bird Conservation (3)

Keywords

little tern

Habitat

- ☐ Physically protect nests with individual exclosures/barriers or provide shelters for chicks of ground nesting seabirds
● Likely to be beneficial | Based on: 4 studies
- ☐ Provide artificial nesting sites for ground and tree-nesting seabirds
● Likely to be beneficial | Based on: 11 studies
- ☐ Use signs and access restrictions to reduce disturbance at nest sites
● Likely to be beneficial | Based on: 10 studies



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https://www.conservationevidence.com/data/index?synopsis_id%5B%5D=8&terms=little+tern&country%5B%5D=&result_type=interventions#search-results

Conservation Evidence project



Names - Common, scientific, regions etc...

Advanced

About

Assessment process

Resources & Publications



Eurasian Curlew

Numenius arquata

CITATION
BirdLife International
e.T22693190A1
3.RLTS T226931

NOT EVALUATED

DATA DEFICIENT

LEAST CONCERN

NEAR THREATENED

VULNERABLE

POPULATION TREND
Decreasing

NUMBER OF MATURE INDIVIDUALS
Population in decline

GEOGRAPHIC RANGE

Taxonomy

Assessment Information

Geographic Range

Population

Habitat and Ecology

Threats

Use and Trade

Conservation Actions

Bibliography

Images and External Links

CITES Legislation from Species+

Conservation Evidence

Expand all

Studies and Actions from Conservation Evidence

DATA SOURCE

The information below is from the Conservation Evidence website.

▼ Studies and Actions from Conservation Evidence in detail

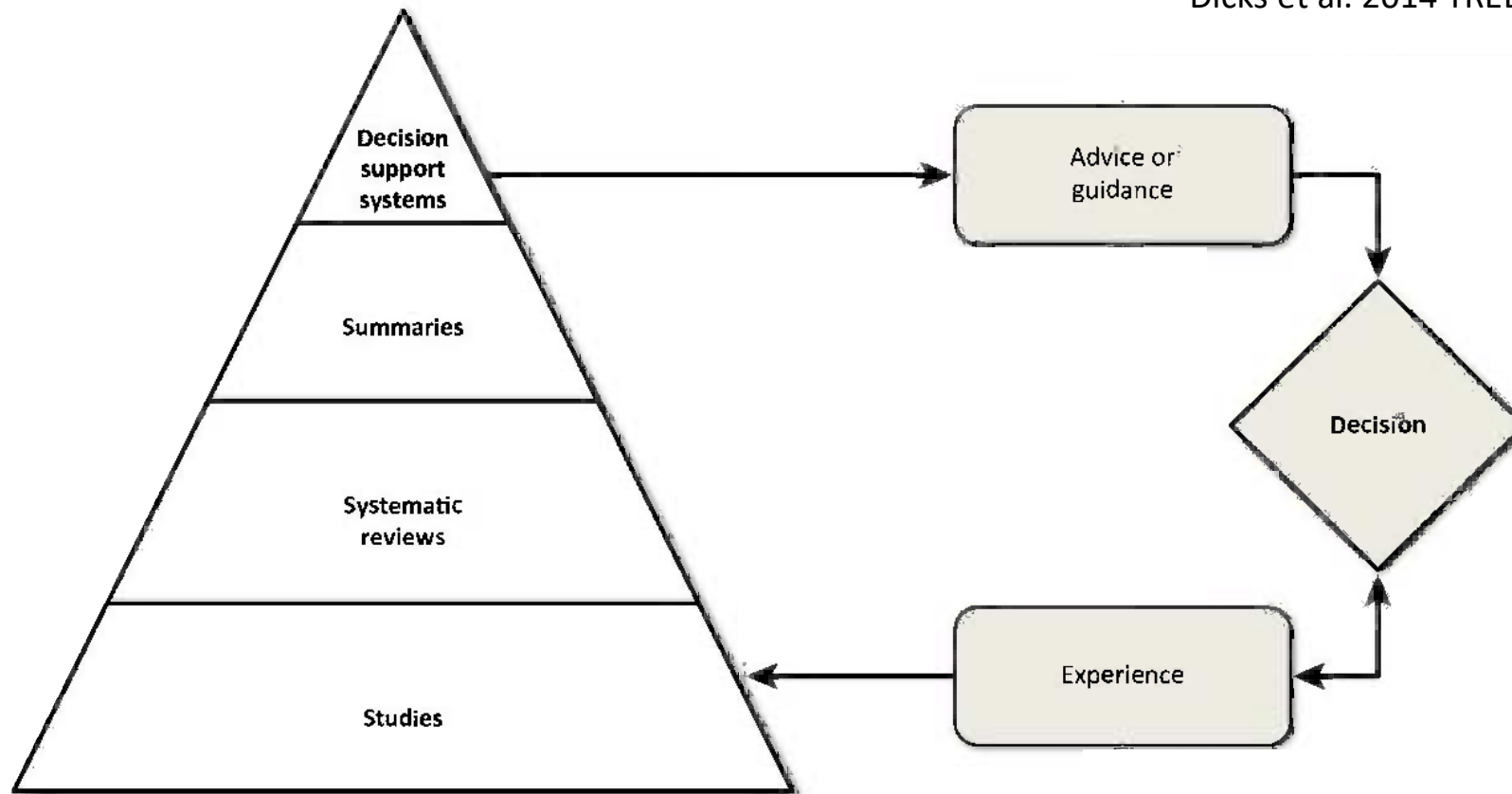
SEARCH TERM: "NUMENIUS ARQUATA" (SHOWING 8 OF 8)

Studies	Actions
Nest predation and numbers of golden plovers <i>Pluvialis apricaria</i> and other moorland waders show	Control predators not on islands for waders show
Artificial feeding to attract wild birds close to a viewing area at Belfast Lough RSPB Reserve, Antrim, Northern Ireland show	- Provide supplementary food for waders to increase adult survival show - Provide supplementary food for wildfowl to increase adult survival show
Botanical monitoring of restored lowland wet grassland at Campfield Marsh RSPB Reserve, Cumbria, England show	- Raise water levels in ditches or grassland show - Raise water levels in ditches or grassland show
Rush cutting to create nesting patches for lapwings <i>Vanellus vanellus</i> and other waders, Lower Lough Erne RSPB reserve, County Fermanagh, Northern Ireland show	Mow or cut semi-natural grasslands/pastures show
The effectiveness of different methods to deter large gulls <i>Larus</i> spp. from competing with nesting terns <i>Sterna</i> spp. on Coquet Island RSPB reserve, Northumberland, England show	Reduce inter-specific competition for nest sites of ground nesting seabirds by removing competitor species show
The recent declines of farmland bird populations in Britain: an appraisal of causal factors and conservation actions show	- Pay farmers to cover the cost of conservation measures (as in agri-environment schemes) show - Pay farmers to cover the costs of bird conservation measures show
Some effects of set-aside on breeding birds in northeast Scotland show	- Provide or retain set-aside areas in farmland show - Provide or retain set-aside areas in farmland show
Habitat restoration for curlew <i>Numenius arquata</i> at the Lake Vyrnwy reserve, Wales show	

<https://www.iucnredlist.org/species/22693190/117917038>

Riassunto della sintesi delle evidenze

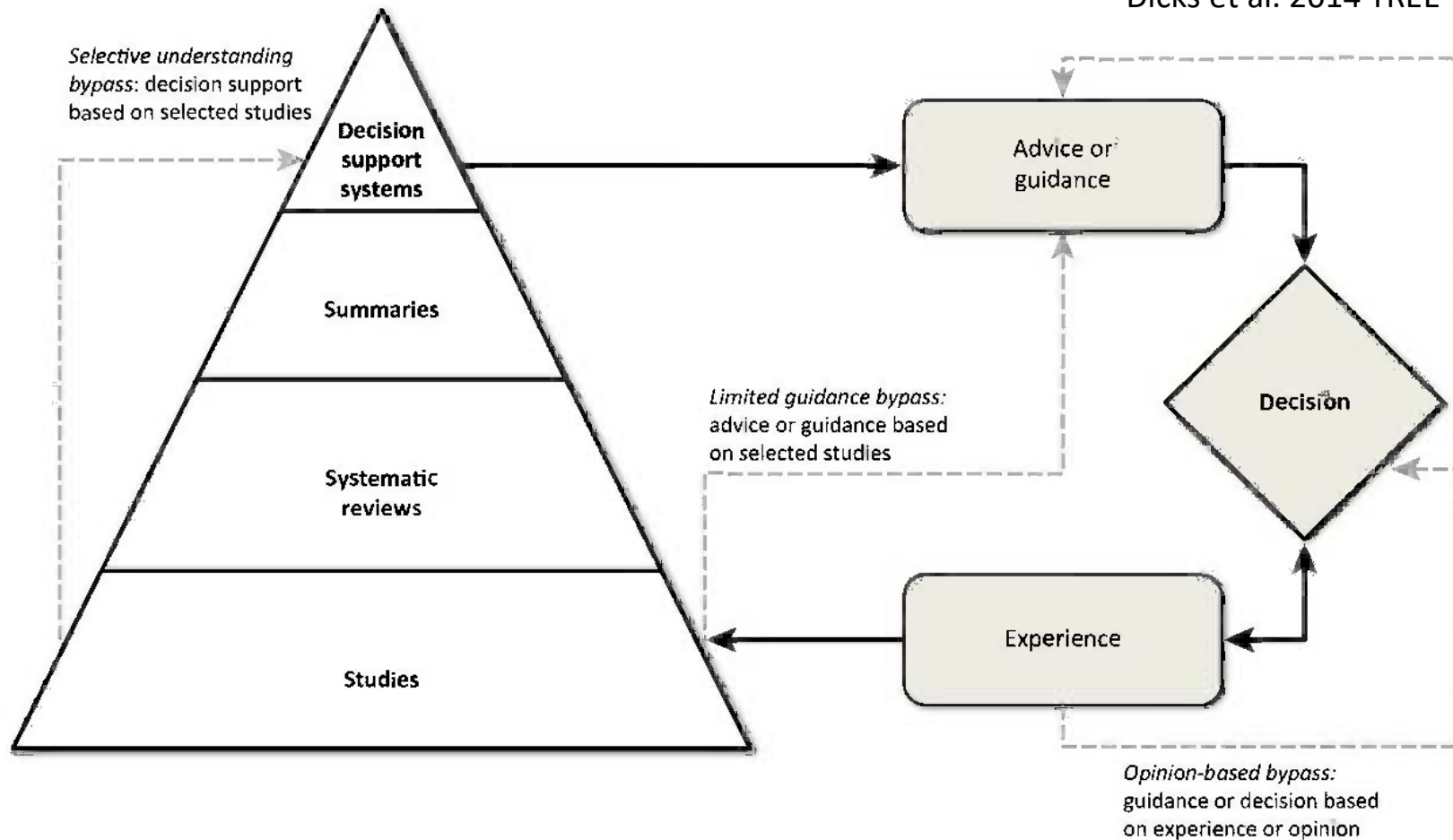
Dicks et al. 2014 TREE



Riassunto della sintesi delle evidenze

(e alcune scorciatoie da evitare)

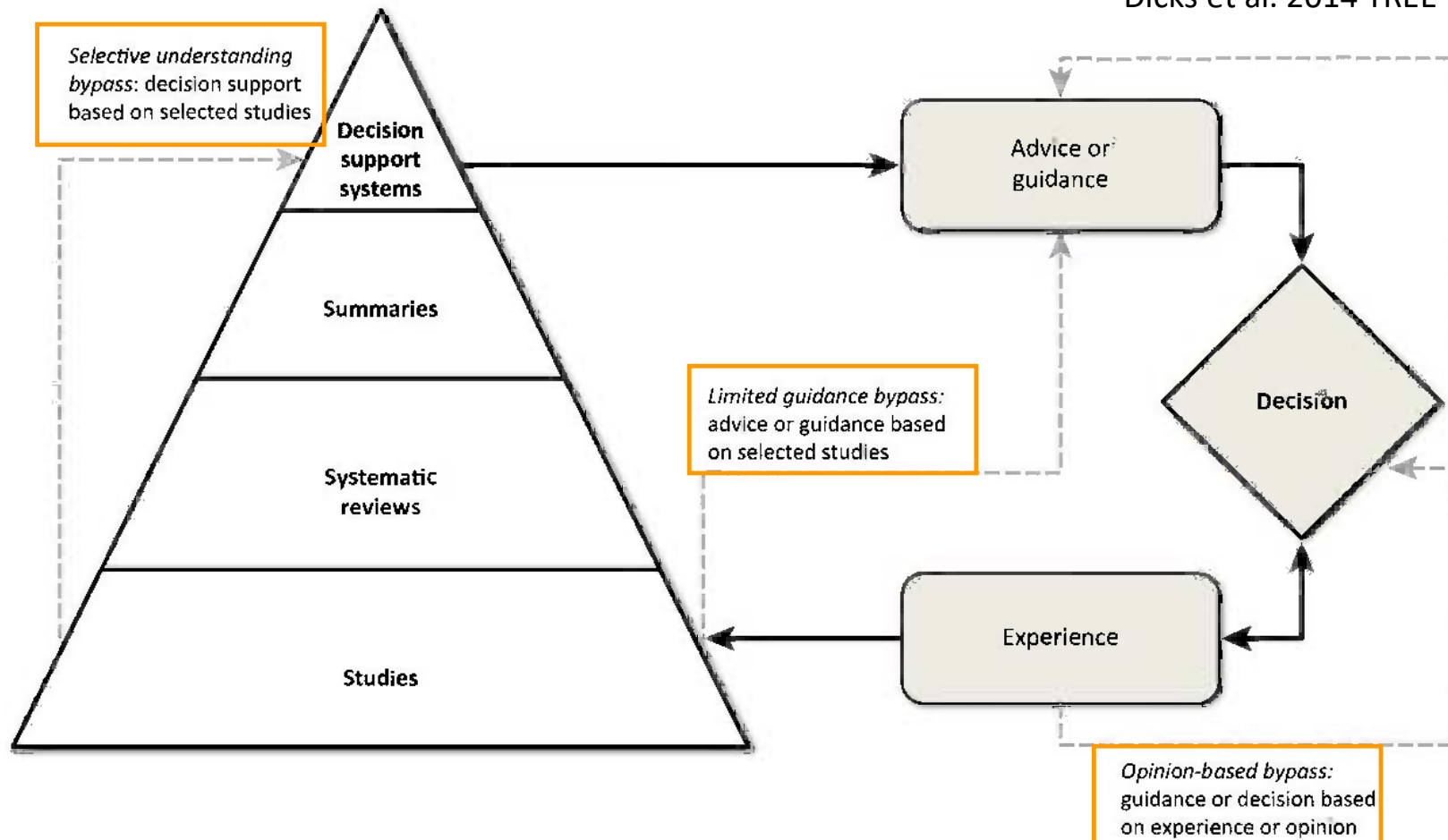
Dicks et al. 2014 TREE



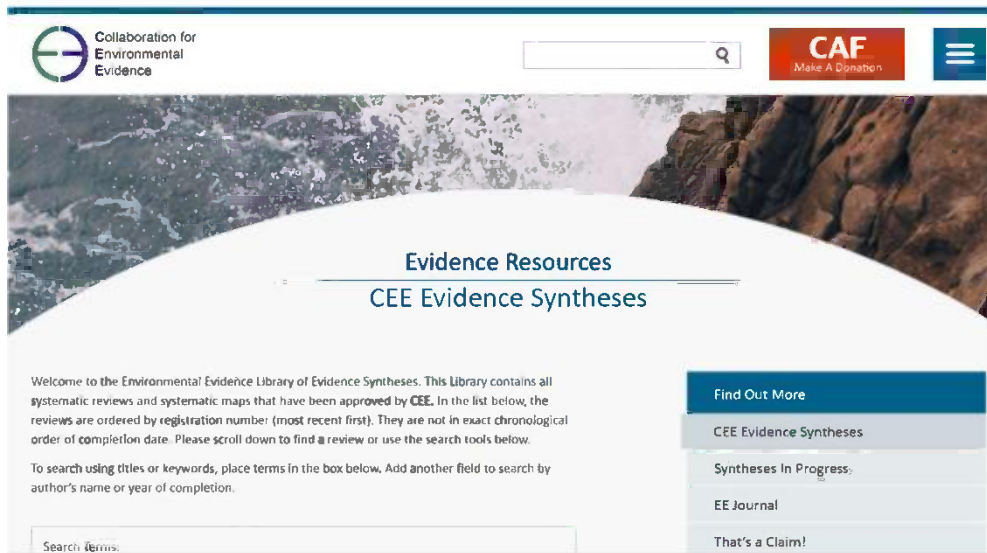
Riassunto della sintesi delle evidenze

(e alcune scorciatoie da evitare)

Dicks et al. 2014 TREE



Sfide nella sintesi delle evidenze



Collaboration for Environmental Evidence

CAF Make A Donation

Evidence Resources
CEE Evidence Syntheses

Welcome to the Environmental Evidence Library of Evidence Syntheses. This Library contains all systematic reviews and systematic maps that have been approved by CEE. In the list below, the reviews are ordered by registration number (most recent first). They are not in exact chronological order of completion date. Please scroll down to find a review or use the search tools below.

To search using titles or keywords, place terms in the box below. Add another field to search by author's name or year of completion.

Search terms:

Find Out More

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- Syntheses In Progress
- EE Journal
- That's a Claim!

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Over 600,000 scientific papers scanned



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Over 34,000 downloads of 'What Works in Conservation'



Over 1.25 million webpage views of www.conservationevidence.com



Browse by category:



Amphibian Conservation

129 Actions



Bat Conservation

190 Actions



Bee Conservation

59 Actions



Bird Conservation

454 Actions



Control of Freshwater Invasive Species



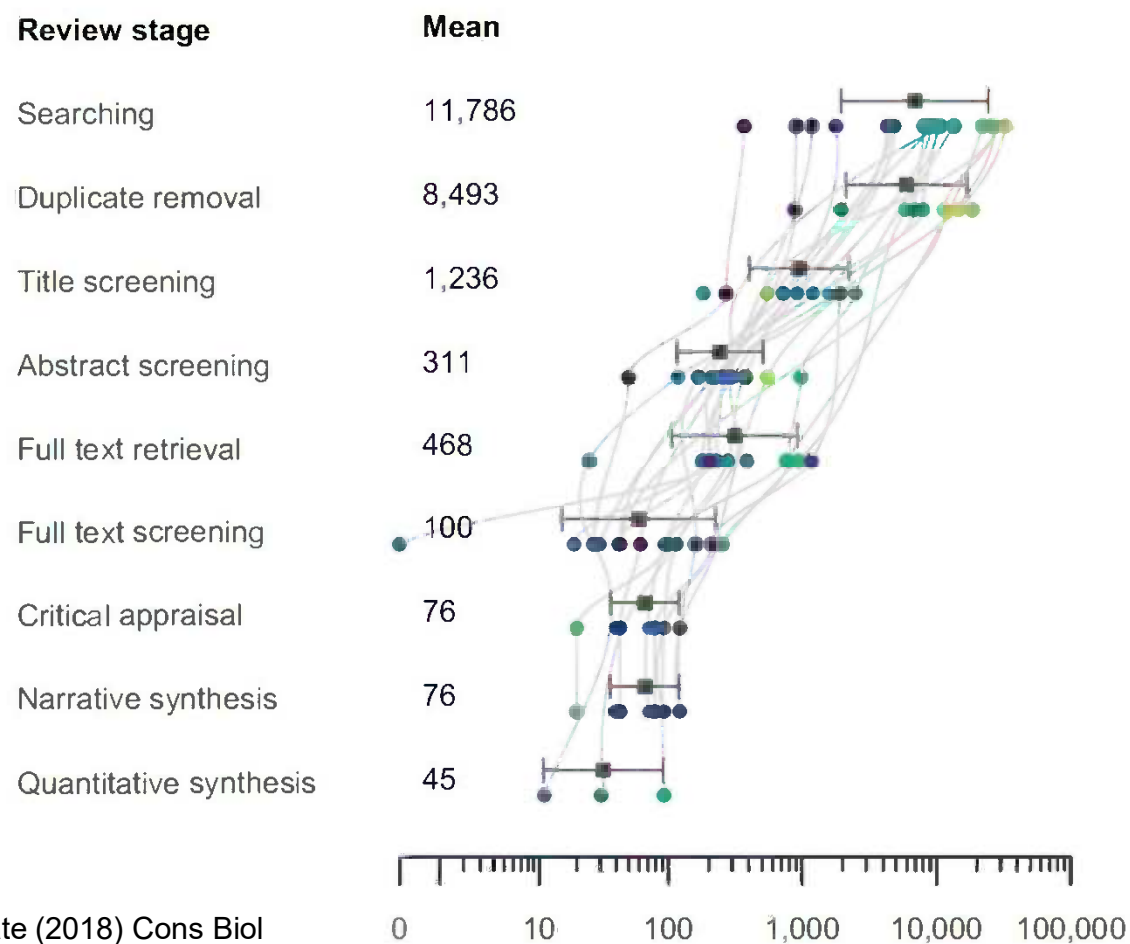
Farmland Conservation

119 Actions

See more

Le sfide: tempo e sforzo

Numero di articoli valutati in ciascuna fase di una revisione sistematica



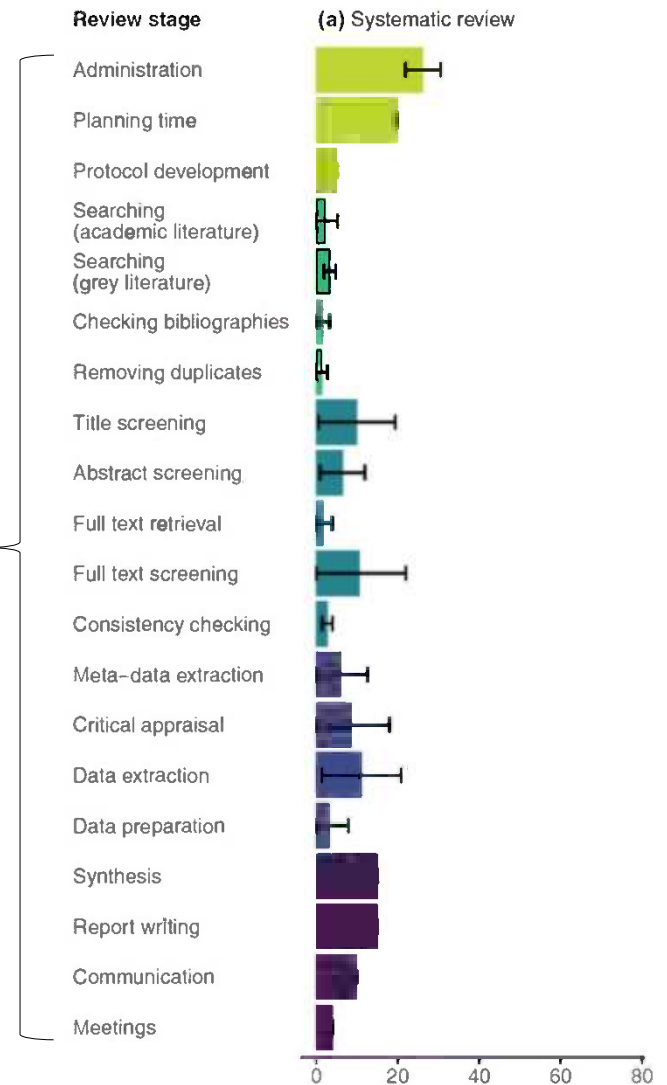
Le sfide: tempo e sforzo

Numero di giorni necessari per ciascuna fase di una revisione sistematica

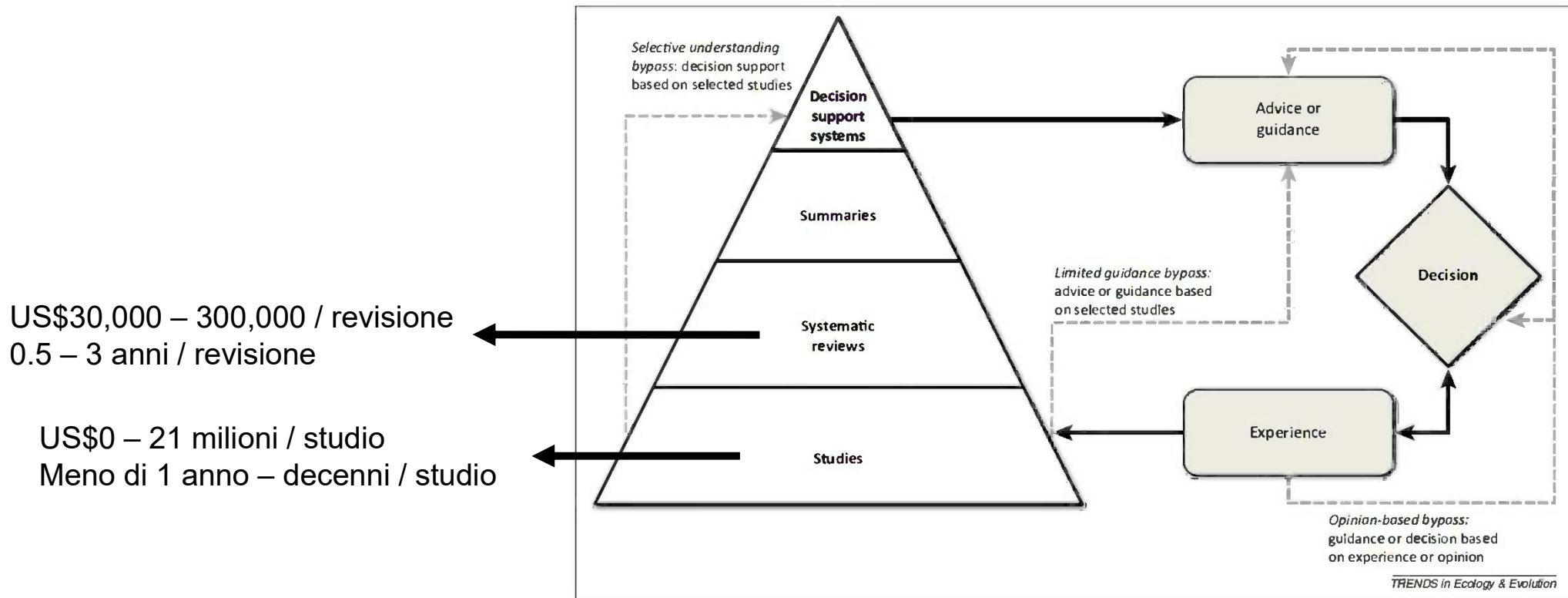
164 giorni-persona a tempo pieno
per rispondere a una domanda
come:

La gestione della vegetazione lungo
le strade influisce sulla biodiversità?

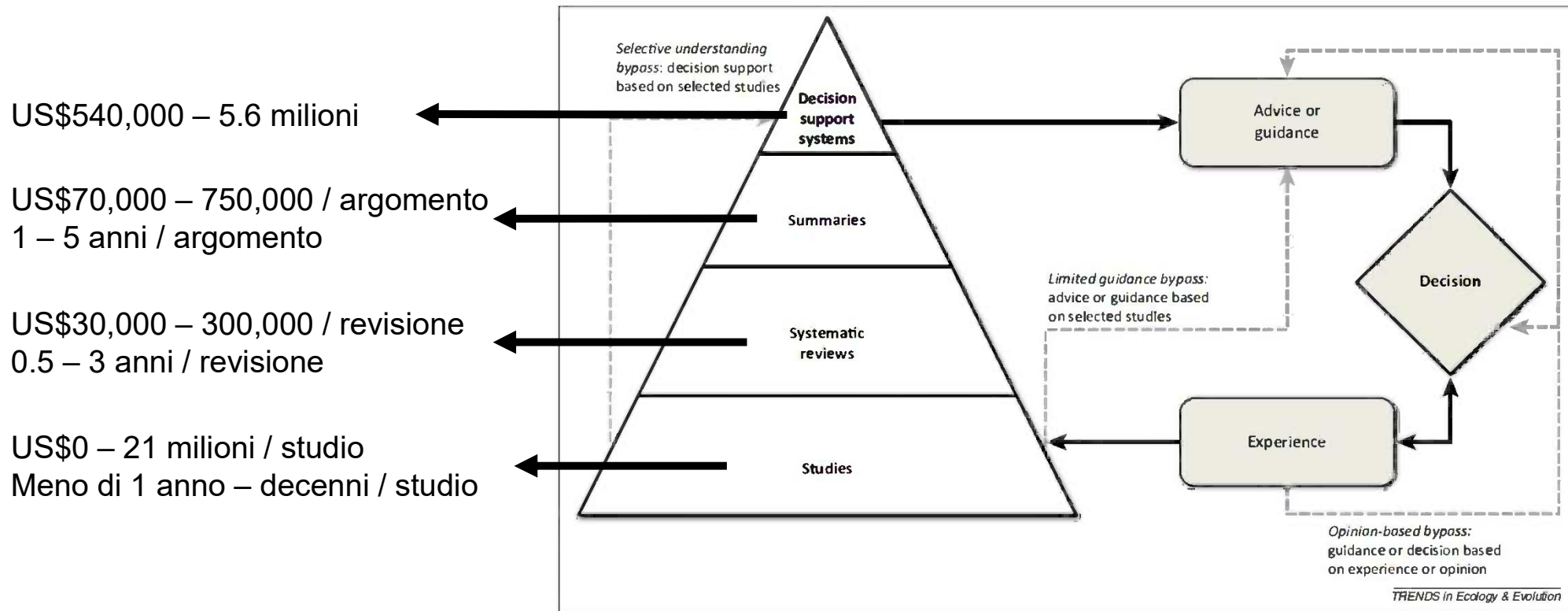
Haddaway and Westgate (2018) Cons Biol



Le sfide: tempo e sforzo



Le sfide: tempo e sforzo



Sfide: lacune nelle informazioni spaziali

Action: Provide artificial nesting sites for songbirds

Azione: Provvedere nidi artificiali per uccelli

Key messages Read our guidance on Key messages before continuing

- Only three studies out of 66 from across the world found [low rates](#) of nest box occupancy, although this may be partially the result of publishing biases. Thrushes, crows, swallows and New World warblers were the target species with low rates of use. Thrushes, crows, finches, swallows, wrens, tits, Old World and tyrant flycatchers, New World blackbirds, sparrows, waxbills, starlings and ovenbirds all used nest boxes. One study from the [USA](#) found that wrens used nest boxes more frequently than natural cavities.
- [Five studies](#) from across the world found higher population densities or population growth rates in areas with nest boxes, whilst one study from the [USA](#) found higher species richness in areas with nest boxes. One study from [Chile](#) found that breeding populations (but not non-breeding populations) were higher for two species when nest boxes were provided.
- [Twelve studies](#) from across the world found that productivity of birds in nest boxes was higher or similar to those in natural nests. One [study](#) found there were more nesting attempts in areas with more nest boxes, although a study from [Canada](#) found no differences in behaviour or productivity between areas with high or low densities of nest boxes. Two studies from [Europe](#) found lower predation of some species using nest boxes. However, three studies from the [USA](#) found low production in nest boxes, either in absolute terms or relative to natural nests.
- [Twelve studies](#) from across the world found that productivity of birds in nest boxes was higher or similar to those in natural nests. One [study](#) found there were more nesting attempts in areas with more nest boxes, although a study from [Canada](#) found no differences in behaviour or productivity between areas with high or low densities of nest boxes. Two studies from [Europe](#) found lower predation of some species using nest boxes. However, three studies from the [USA](#) found low production in nest boxes, either in absolute terms or relative to natural nests.
- Thirteen studies from across the world founds that [use](#), [productivity](#) or [usurpation](#) varied with nest box design, whilst seven found no difference in [occupancy rates](#) or [success](#) with different designs.

Overall Effectiveness Category: Beneficial	
Effectiveness: 67%	?
Certainty: 85%	?
Harms: 0%	?

Where has this evidence come from?

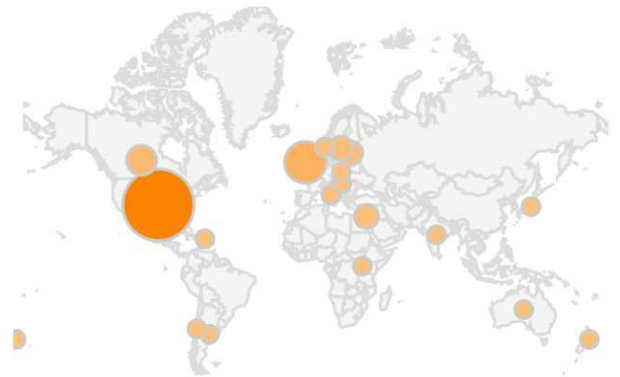
Thalitis: US Government

Where has this evidence come from?

Bird Conservation
[View all](#)

Click [here](#) to see the list of journals searched for this synopsis, and [here](#) to see all the journals searched for all synopses.

Source countries



Sfide: lacune nelle informazioni spaziali



Actions

Can't find what you're looking for? [You can also search Individual Studies.](#)

Not sure what Actions are? [Read a brief description.](#)

Refine results

Category

☒ Bird Conservation (36)

Keywords

skylark

Habitat

- ☐ Artificial Habitats
- ☐ Grassland
- ☐ Wetlands

[More ▼](#)

Threat

- ☐ Agriculture & aquaculture
- ☐ Natural system modifications

36 actions found

- ☐ Create skylark plots for bird conservation
 - Likely to be beneficial | Based on: 7 studies
- ☐ Provide or retain set-aside areas in farmland
 - Beneficial | Based on: 22 studies
- ☐ Leave overwinter stubbles
 - Likely to be beneficial | Based on: 14 studies
- ☐ Raise mowing height on grasslands to benefit birds
 - Unknown effectiveness (limited evidence) | Based on: 2 studies
- ☐ Plant nectar flower mixture/wildflower strips for birds
 - Likely to be beneficial | Based on: 7 studies
- ☐ Use mowing techniques to reduce chick mortality
 - Likely to be beneficial | Based on: 3 studies

Sfide: lacune nelle informazioni spaziali



Actions

Can't find what you're looking for? [You can also search Individual Studies.](#)

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- ☐ Plant nectar flower mixture/wildflower strips for birds
Likely to be beneficial | Based on: 7 studies
- ☐ Use mowing techniques to reduce chick mortality
Likely to be beneficial | Based on: 3 studies

Action: Provide or retain set-aside areas in farmland

Azione: fornire o mantenere aree a set-aside in ambienti agricoli

Key messages [Read our guidance on Key messages before continuing](#)

- [Three replicated studies](#) and a review of five studies from Europe and North America examining species richness or diversity found that more species were found on set-aside than on crops. [One](#) found fewer species on set-aside than other agricultural habitats.
- All 21 studies, including a systematic review, 12 replicated experiments and two reviews, from Europe and North America that investigated population trends or habitat associations found that some species were found at higher densities or used set-aside more than other habitats, or were found on [set-aside](#). [Four studies](#) (three replicated) from the UK found that some species were found at lower densities on set-aside compared to other habitats.
- [Three](#) of four replicated studies from the UK found that waders and Eurasian skylarks had higher productivities on set-aside, compared to other habitats. [One study](#) found that skylarks nesting on set-aside had lower productivity compared to those on cereal crops, and similar productivities to those on other crops.
- [One replicated paired study](#) from the UK found that rotational set-aside was used more than non-rotational set-aside, [a replicated paired study](#) found no differences between rotational and non-rotational set-aside. A [review](#) from Europe and North America found that naturally regenerated set-aside held more birds and more species than sown set-aside.

Background information and definitions

those on other crops.

- [One replicated paired study](#) from the UK found that rotational set-aside was used more than non-rotational set-aside, [a replicated paired study](#) found no differences between rotational and non-rotational set-aside. A [review](#) from Europe and North America found that naturally regenerated set-aside held more birds and more species than sown set-aside.

Background information and definitions

Allocation of some farmland to 'set-aside' (fields taken out of production) was compulsory under European agricultural policy from 1992 until 2008. Originally intended as a method of reducing production, set-aside has also been promoted as a way of protecting on-field biodiversity. Set-aside fields can be sown with fallow crops or left to naturally regenerate. Set-aside can be rotational (in a different place every year) or long term (retained for 5–20 years).

A 2008 literature review of the Environmental Stewardship programme, particularly Entry Level Stewardship (ELS) in the UK (Vickery *et al.* 2008) found that the population trends of all Farmland Bird Index species were positively correlated with the availability of set-aside in that year and that Entry Level Stewardship may not be able to effectively replace set-aside.

Overall Effectiveness Category: Beneficial

Effectiveness: 70%	?
Certainty: 75%	?
Harms: 0%	?

Where has this evidence come from?

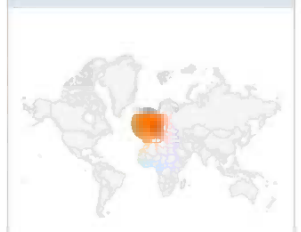
 Bird Conservation
[View all](#)

[Click here](#) to see the list of journals searched for this synopsis, and [here](#) to see all the journals searched for all synopses.

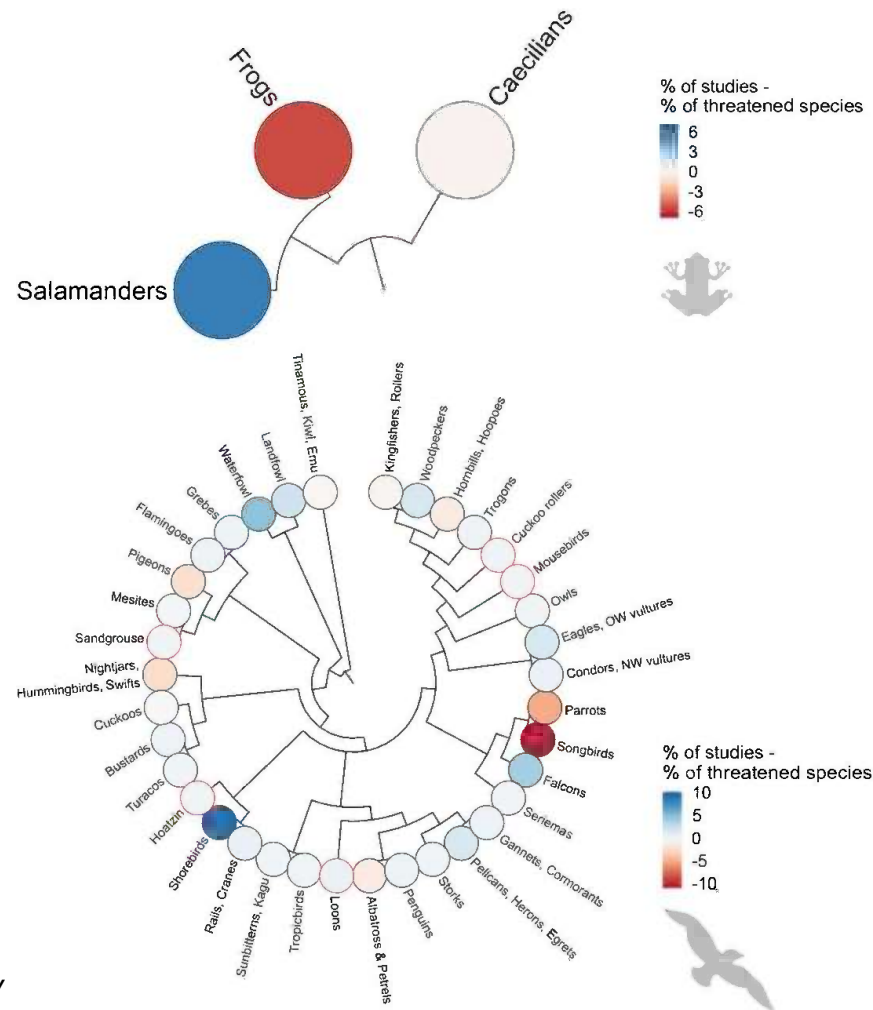
 Bird Conservation
[View all](#)

[Click here](#) to see the list of journals searched for this synopsis, and [here](#) to see all the journals searched for all synopses.

Source countries

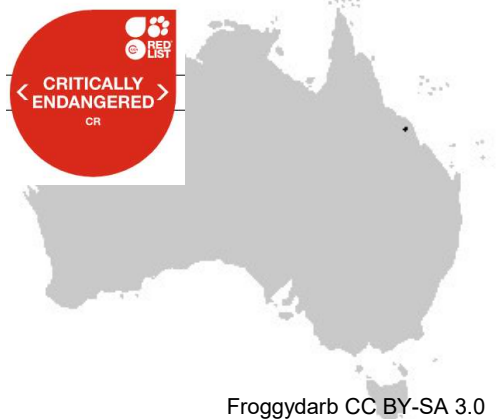


Sfide: lacune tassonomiche



Christie et al (in press) *Conservation Biology*

Sfide: lacune tassonomiche



Eungella Torrent Frog (*Taudactylus eungellensis*)

Actions

Can't find what you're looking for? [You can also search Individual Studies.](#)

Not sure what Actions are? [Read a brief description.](#)

Refine results

Category

Keywords

Taudactylus eungellensis

Habitat

Threat

Action type

0 actions found

No action results

Sorry, your search didn't return any action pages. Please consider the following tips:

- Start with broad search terms, refining your search using the panel on the left
- If you're looking for evidence about a particular species, try searching at the genus or family level
- Check your spelling
- You can also search [Individual Studies](#).
- Bear in mind that the Conservation Evidence project is a **work in progress**. We have actively collected evidence on a range of specific topics, as shown on the [Synopses page](#). Beyond these subjects our coverage may be less thorough.

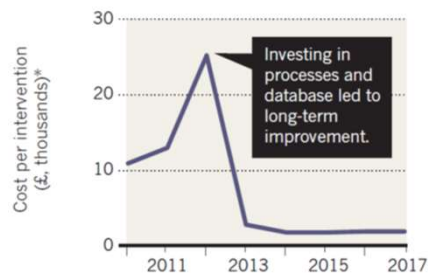
Results per page 25 ▼

Superare le sfide nella sintesi delle evidenze

COST-EFFECTIVE

Manually searching journals to find studies on actions designed to conserve species is costly at first. But as the searches accumulate, subsequent evidence syntheses require fewer resources.

Spending per intervention



New journals searched and conservation actions accessed

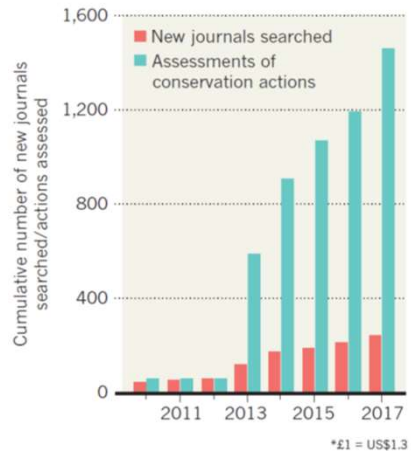


Table 1 | Emerging methods for rigorous and efficient research synthesis

Stage	Problem	Description	Solution
Planning	Planning workflow	Large numbers of software tools are available, but their relative strengths and weaknesses are unclear	Online databases of relevant tools ¹⁵
Searching	Data collection	Sources of 'grey literature' such as organizational websites often lack convenient download functions	Web scraping ²⁷
	Search record extraction	Downloading information from academic databases is slow and labour-intensive	No user-based solution: provider-dependent
	Incomplete search results	Downloading information from academic databases is slow and labour-intensive	Semantic analysis of key texts to locate additional search terms (synonyms)
Screening	Duplicates	Same content repeated many times in the dataset because of multiple databases searched	Duplicate detection algorithms ²⁸
	Classification	Need for overview of broad trends to ensure only relevant topics are included	Simple machine-learning approaches such as topic modelling ¹¹
	Inclusion of irrelevant material	Non-target subjects included in search results	Dynamic classification using machine learning ²¹
Synthesis	Locating full text articles	Download of full-text documents often requires manual searching and downloading	Built in to some software platforms ²⁹ . Limited by copyright and access issues
	Data extraction	Information located in a combination of text, tables and figures, requiring manual checking	Automated image and natural language processing ^{30,31}
	Meta-analysis	Appropriate statistical models, methods and workflows can be complex, particularly for new users	Many tools available ^{29,32}
	Data visualization	Presenting complex data for broad audiences is difficult	Open source/access to data. Interactive diagrams, such as evidence atlases, heat maps and visualizations ⁸

La necessità di una valutazione critica

- Non tutti gli studi sono ugualmente validi
- Alcune ricerche sono più valide di altre
- Validità interna (qualità) e validità esterna (generalizzabilità)
- Tutte le sintesi rigorose delle evidenze dovrebbero valutare la validità degli studi inclusi E tenere conto della variabilità della loro validità nella sintesi
 - e.g. concentrandosi maggiormente su studi di maggiore validità
 - Includendo solo studi robusti (alta validità) nelle sintesi dettagliate (ad esempio meta-analisi)
 - Includendo una valutazione della loro validità come moderatore nella sintesi

Superare le sfide nella sintesi delle evidenze

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Providing evidence to improve practice



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Our online journal publishes research, monitoring results and case studies on the effects of conservation interventions. All papers include some monitoring of the effects of the intervention and are written by, or in partnership with, those who did the conservation work. It includes interventions such as habitat creation, habitat restoration, translocations, reintroductions, invasive species control, and education or integrated conservation development programmes, from anywhere around the world.

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Conservation Evidence

Providing evidence to improve practice



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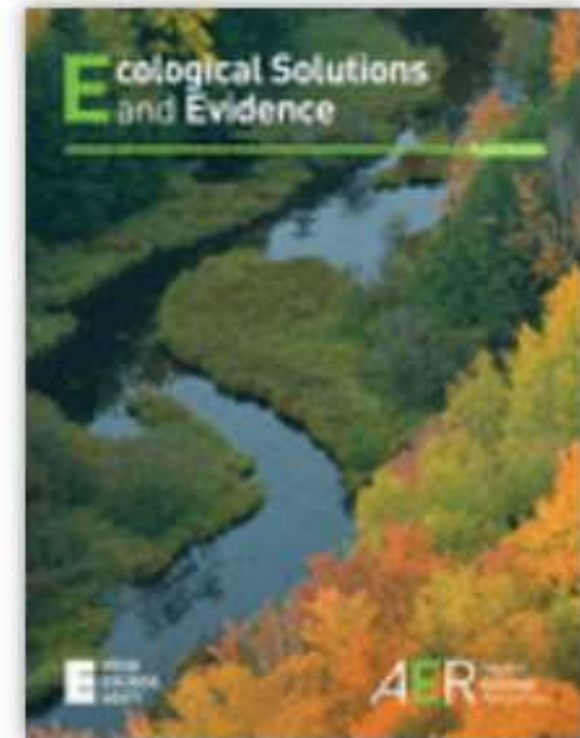
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Sommario

La conoscenza scientifica per la conservazione è stata accumulata rapidamente in tutto il mondo, ma l'interfaccia ricerca-pratica deve essere rafforzata

La conservazione basata sull'evidenza mira ad affrontare questo problema attraverso:

- La sintesi delle evidenze e la loro valutazione critica (revisioni sistematiche, sinossi)
- La presentazione delle evidenze in un modo facilmente comprensibile e accessibile (sinossi e strumenti di supporto decisionale)
- Un processo decisionale basato sull'evidenza che aiuta a evitare pregiudizi, aumenta la trasparenza e aumenta l'efficacia

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Risorse

- Conservation Evidence www.conservationevidence.com
- Collaboration of Environmental Evidence www.environmentalevidence.org/
- Campbell Collaboration <https://campbellcollaboration.org/>
- Biodiversity Knowledge Network www.vliz.be/projects/biodiversityknowledge/
- Guide to influencing decision-making – Science to Action
 - <http://seaknowledgebank.net/e-library/science-action-guidebook-scientists-guide-influencing-decision-making-decision-makers>

Glossario dei termini (tratto da Dicks et al. 2014)

Consulenza o guida: raccomandazioni, scritte o fornite verbalmente a un decisore. Queste possono derivare dall'interpretazione delle evidenze sintetizzate o dal risultato dell'applicazione di un sistema di supporto decisionale in un dato contesto.

Sistema di supporto decisionale: uno strumento, solitamente basato su un software, progettato per assistere i responsabili delle decisioni nel prendere una decisione particolare, spesso illustrando diversi possibili risultati visivamente o numericamente o guidando gli utenti attraverso fasi decisionali logiche.

Esperienza: informazioni ottenute attraverso tentativi ed errori o conoscenze esperienziali non documentate su una particolare area, ambiente o obiettivo di gestione. L'esperienza informa le decisioni e la progettazione dei singoli studi.

Studio: rapporto di una singola indagine scientifica che verifica l'effetto di un particolare intervento o di una variabile. Ai fini della sintesi, gli studi dovrebbero essere suddivisi in singoli esperimenti o confronti. Possono essere qualitativi o quantitativi.

Sommario: una descrizione standardizzata e concisa dei risultati forniti dai migliori studi disponibili e revisioni sistematiche, in un settore d'indagine ambientale, regolarmente aggiornata e di solito con raccomandazioni basate su evidenze. I sommari coprono una gamma di possibili opzioni o effetti e preferibilmente utilizzano un processo di revisione esplicito.

Sinossi: una breve descrizione in linguaggio semplice dei risultati di uno studio o di una revisione sistematica. Le sinossi sono spesso disponibili in database o riviste per i professionisti. Quando vengono raccolti per un settore d'indagine e valutati per estrarne messaggi o raccomandazioni per i responsabili delle decisioni, possono formare le unità di base dei sommari.

Mappa sistematica: un catalogo o un database delle evidenze disponibili in un'area definita delle scienze ambientali, derivato utilizzando un protocollo di ricerca e selezione sottoposto a revisione paritaria. Le mappe sistematiche non estraggono e analizzano i dati per rispondere a una domanda specifica, ma possono fornire una valutazione semiquantitativa o qualitativa della qualità delle evidenze e dei risultati se è stato letto il testo completo degli studi selezionati.

Revisione sistematica: una revisione, una valutazione critica e un'analisi dei risultati scientifici quantitativi o qualitativi relativi a una domanda specifica, sulla base di un protocollo di ricerca e una valutazione sottoposti a revisione paritaria. I dati estratti possono essere sintetizzati qualitativamente, quantitativamente, utilizzando la sintesi narrativa o una combinazione di questi.

Esercizio: sfide di conservazione globale

Questa valutazione sarà impostata in modo molto simile a Sutherland et al. (2018): Cosa funziona nella conservazione.

È disponibile come PDF gratuito all'indirizzo:

<https://www.openbookpublishers.com/product/1031>

Si prega di leggere l'introduzione (pagine 1-6) per comprendere il progetto e i metodi utilizzati. Tieni presente che i tuoi metodi saranno leggermente diversi. La differenza principale è che tu sei l'esperto di questo lavoro!

Sulla base di ciò che leggi, dovrai fare una valutazione informata dell'efficacia delle strategie proposte

La prima cosa da fare è scegliere un taxa o un habitat che sia di interesse per la conservazione (quindi praticamente qualsiasi cosa!). Dovresti evitare gruppi che sono stati valutati di recente altrimenti il tuo lavoro sarà molto simile a quello del libro! Rimangono ancora molti gruppi da valutare.

Pensa ad alcune delle principali minacce a questo taxa / habitat. Ad esempio, gli anfibi sono minacciati da malattie, in particolare chytridiomicosi e ranavirus. È quindi necessario pensare e ricercare strategie per mitigare queste minacce. Ad esempio, una rapida ricerca su Google Scholar di "conservazione degli anfibi e chytridiomicosi " potrebbe portare alla luce probiotici, zooplancton, rifugi climatici, disinfettanti, traslocazione ecc.

Sulla base di questa ricerca iniziale, raggruppa le tue strategie. Potresti voler selezionare più di una minaccia, ma inizia con una e guarda quante parole hai una volta che hai finito di valutare questa minaccia. Il conteggio dovrà essere di 2000-3000 parole, quindi dovrai valutare sufficienti minacce per raggiungere questo obiettivo.

Una volta che hai deciso il taxa / habitat, la minaccia e le strategie, dovrai cercare la letteratura in modo sistematico.

Puoi farlo in qualsiasi modo desideri, ma ti consiglio di utilizzare Web of Science (accedi tramite <http://wok.mimas.ac.uk/>; fai clic sul pulsante viola). Selezionare "Tutti i database" dal menu a discesa e quindi immettere i termini di ricerca sistematica, utilizzando "taxa / habitat, minaccia" (ad es. 'chytridiomicosi negli anfibi' e 'probiotici') (in inglese). Ripeti l'operazione per ogni strategia. Nota che puoi usare un asterisco (*) come carattere jolly, quindi "anfibio*" restituirà risultati per "anfibio" e "anfibi". Puoi quindi esaminare i documenti che appaiono per questi termini, valutando se gli interventi proposti sono benefici, dannosi, ecc.

Da questi risultati, scriverai una sinossi per ciascuna strategia come in Sutherland et al. (2018). Sulla base di queste evidenze, assegnerai a ciascuna strategia una categoria di efficacia come descritto in dettaglio a pagina 6 di Sutherland et al. Usa le categorie nella Tabella 1 come guida, ma tieni presente che utilizzerai realmente solo le prime due colonne, poiché il punteggio e le soglie (colonne 3 e 4) si basano sulle valutazioni degli esperti (ma in questo esercizio sei tu l'esperto!).

Questa valutazione svilupperà le tue capacità e abilità per identificare le informazioni chiave da un ampio corpo di letteratura, riassumere e sintetizzare queste informazioni in modo succinto e utilizzare l'analisi critica per valutare l'efficacia di queste strategie per conservare il taxa / habitat d'interesse.

Scrivilo

Introduzione: fornisci una breve introduzione al motivo per cui siamo interessati a questo taxa / habitat e al motivo per cui hai scelto le minacce selezionate (~ 300 parole).

Metodi: descrivi come hai condotto le tue ricerche e i criteri che hai utilizzato per assegnare le categorie di efficacia. Puoi includere una copia della Tabella 1 estratta da Sutherland et al. (2018) se lo desideri; citala però in modo accurato!

Risultati e discussione: queste sezioni saranno presentate insieme in un formato simile a quello del libro. Sotto ogni titolo di minaccia, inserisci una tabella riepilogativa dell'efficacia delle strategie valutate. Sotto questa sarà riportata la sinossi per ciascuna strategia, in cui fornisci un breve riassunto dei documenti che hai valutato, nello stesso stile del libro.

L'unica differenza è che devi fornire citazioni nel testo alla fine di ogni affermazione / frase. Fornisci anche un elenco completo e accurato delle referenze alla fine del tuo lavoro.

Dichiarazione conclusiva: includi un paragrafo finale che raccolga i tuoi risultati, inclusi suggerimenti per lavori futuri

Global Conservation Challenges: Report Marking Criteria					
Overall level	Outstanding (19-20)	Excellent (17-18)	Very good (15-16)	Good (13-14)	Satisfactory (10-12)
Understanding of subject matter (20 marks)	Outstanding with critical awareness of relevance of issues. Exceptional expression of ideas, and evidence of originality.	Excellent with critical awareness of relevance of issues. Excellent expression of ideas, some originality.	Very good with critical awareness of relevance of issues. Very good expression of ideas, potential for originality.	Good with some awareness of relevance of issues. Ideas are expressed well, with some minor limitations.	Basic with limited awareness of relevance of issues. Limited but satisfactory expression of ideas.
Use of primary literature (20 marks)	Comprehensive review of sources. Outstanding evaluation and synthesis of source material with no significant omissions or irrelevant issues.	Excellent independent research. The majority of significant sources are evaluated and synthesized.	Very good independent research. A wide range of sources are evaluated and synthesized.	Good research to extend taught materials. Evidence of evaluation of sources, some deficiencies in choice and synthesis.	Limited research to extend taught materials. Limited evaluation of sources, deficiencies in choice and synthesis.
Critical analysis based on evidence (20 marks)	Outstanding analysis, authoritative questioning of sources, understanding of bias, very strong independence of thought and cogency.	Excellent analysis – highly coherent questioning of sources, understanding of bias, strong independence of thought and cogency.	Very good critical analysis. Sources are questioned appropriately, and a very good understanding of bias, showing independence of thought and cogency.	Critical analysis with some questioning of sources, understanding of bias, with some evidence of independence of thought and cogency.	Analysis evident but uncritical. Sources are not always questioned, with limited but acceptable independence of thought and cogency.
Structure of argument (20 marks)	Outstanding structure, compelling and persuasive argument that leads to a valuable contribution to field, paves way for future work. Clear assessment of uncertainties and limitations.	Argument has excellent structure and persuasiveness, leading to significant insights and relevant future work. Structured assessment of uncertainties and limitations.	Well-structured and persuasive argument, insightful conclusion draws together key issues and possible future work. Structured assessment of limitations.	Structured and fairly convincing argument leads to conclusion that summarises key issues. Acknowledges limitations and suggests some implications.	Argument has some structure and development towards conclusion with limitations in summary of issues. Identifies limitations but may not fully appreciate implications.
Presentation / communication (20 marks)	Very high levels of presentation, structure, layout and / or verbal communication. Full information conveyed lucidly. Creative and original work.	Excellent standard of presentation including an extremely clear layout and style. Information conveyed in an engaging, creative and lucid manner.	Very good layout and general standard of presentation. Information conveyed in an engaging and cogent manner.	Good standard of presentation displaying an ability to communicate ideas generally clearly.	Presentation satisfactory, with limited but effective style of presentation and/or level of verbal communication.