

Supporting information 2

The drivers of anguillid eel movement in lentic water bodies: a systematic map

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Table S1 Elements of a reviewable PI/ECO question, adapted from Collaboration for Environmental Evidence (2013)

Table S2 Boolean keyword terms used for each search engine. Search options indicates the location in the journal that the keywords were searched for. Note that ‘topic’ for web of science includes title, book title, abstract, broad terms, descriptors data, super taxa, systematics and taxa notes.

Table S3 Eligibility criteria used to screen articles for inclusion in the systematic map. Note that as we were still interested in all movement processes in anguillid eels, whether there were comparators or not, and as such there are no exclusion criteria for our comparators.

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Table S1 Elements of a reviewable PI/ECO question, adapted from Collaboration for Environmental Evidence (2013)

Question element	Definition	Primary question PI/ECO components
Population	Unit of study (e.g. ecosystem, species) that should be defined in terms of the statistical populations of subject(s) to which the intervention will be applied	All anguillid eel species
Intervention/ Exposure	Proposed management regime, policy, action or the environmental variable to which the subject populations are exposed	Lentic ecosystems. Lentic defined as water bodies with low flow rates. We include fresh, salt, and brackish water bodies.
Comparator	Either a control with no intervention/exposure or an alternative intervention or a counterfactual scenario	Different environmental variables or habitat structures.
Outcome	All relevant outcomes from the proposed intervention that can be reliably measured or outcome that might result from exposure to an environmental variable.	Eel movement through space and time or distributions (including presence/absence, use, abundance, or locations).

Table S2 Boolean keyword terms used for each search engine. Search options indicates the location in the journal that the keywords were searched for. Note that ‘topic’ for web of science includes title, book title, abstract, broad terms, descriptors data, super taxa, systematics and taxa notes.

Search Engine	Search options	Search terms
Google Scholar	Full text	(Eel* OR Anguilla*) AND (lentic * OR "still water"* OR lake* OR lacustrine* OR pond* OR reservoir *) AND (behaviour* OR movement* OR telemetry* OR tag* OR mark*) AND (environment* OR habitat*)
Scopus	Title – Abstract - Keywords	(Eel* OR Anguilla*) AND (lentic * OR "still water"* OR lake* OR lacustrine* OR pond* OR reservoir *) AND (behaviour* OR movement* OR telemetry* OR tag* OR mark*) AND (environment* OR habitat*)
Web of Science	Topic	(Eel* OR Anguilla*) AND (lentic * OR "still water"* OR lake* OR lacustrine* OR pond* OR reservoir *) AND (behaviour* OR movement* OR telemetry* OR tag* OR mark*) AND (environment* OR habitat*)

Table S3 Eligibility criteria used to screen articles for inclusion in the systematic map. Note that as we were still interested in all movement processes in anguillid eels, whether there were comparators or not, and as such there are no exclusion criteria for our comparators.

PI/ECO component	Eligibility criteria	Exclusion criteria
Population	Any eel species	Model species is not an eel
Intervention/Exposure	Lentic water body	Study system is not a lentic waterbody Study was not ex situ
Comparator	Extrinsic and intrinsic metrics	NA
Outcome	Eel movement, or change of distribution, through space and time Eel density or presence absence studies with multiple samples over time Tagging or marking studies Fisheries and CPUE studies Habitat use metrics	Movement ecology is not the focus of the study Studies that assess movement through coarse temporal scale metrics such as otolith or stable isotope analysis Studies that only sample distributions in a single point in time

Table S4 Articles metadata extraction categories and descriptions

Metadata extraction category	Description
Sysrev ID	Unique number given to each article assigned by Sysrev
Title	Title of the article
Journal	Name of Journal
Authors	Names of authors
DOI	Digital object identifier assigned to each article
Article type	Academic journal, thesis, report etc.
Peer-reviewed	Was the article peer reviewed?
Year	Year article was published
Country of primary author	Institution country of the primary author
Study country	Country the study took place
Study country latitude (decimal degrees)	Latitude of study country, in decimal degrees
Study country longitude (decimal degrees)	Longitude of study country, in decimal degrees
Study location coordinates (decimal degrees)	Latitude and longitude of study country
Latitude (decimal degrees)	Latitude of location of study site, in decimal degrees
Longitude (decimal degrees)	Longitude of location of study site, in decimal degrees
Study continent	Continent where study took place
Study continent latitude (decimal degrees)	Latitude of study continent, in decimal degrees
Study continent longitude (decimal degrees)	Longitude of study continent, in decimal degrees
Species name (latin)	Latin name of study species
Species name (common)	Common name of study species
Research focus	Theme of research applications in the article
Research focus grouped	Grouped research focus
Water body	Type of lentic water body used in the study

Waterbody type	Was the water body in the study fresh, brackish or salt water?
Size of water body (ha)	Size of the water body in hectares
Max depth (m)	Maximum depth of the water body in metres
Mean depth (m)	Mean depth of the water body in metres
Closed system	Was there a natural or manmade inlet or outlet to the water body, or was this completely closed?
Capture	How were eels in the study captured?
MD method	What movement and distribution measurement methods were used to monitor movement?
MD group	Movement and distribution measurement methods grouped by commonality
Life stage	Juvenile; Immature Adult; Matured Adult
Life stage study name	How did the article refer to the life stage of the study animals?
LS sample	Was sample size given for life stage?
Sample size (individuals)	Sample size of individuals tagged/caught in the study
Sample size (YN)	Was a sample size given in the article?
Females (n)	Number of females tagged/caught in the study
Males (n)	Number of males tagged/caught in the study
Sex sample (YN)	Were sex data provided in the study?
Mean length (mm)	Mean length of study animals
Min length (mm)	Minimum length of study animals
Max length (mm)	Maximum length of study animals
Length range (mm)	Length range of study animals
Mean length groups (mm)	Mean length by group (e.g. species) where given
Length range groups (mm)	Length range by group (e.g. species) where given
Length sample (YN)	Were length data provided in the study

Mean mass (g)	Mean weight of study animals
Min mass (g)	Minimum weight of study animals
Max mass (g)	Maximum weight of study animals
Weight range (g)	Weight range of study animals
Mean mass groups (mm)	Mean length by group (e.g. species) where given
Length mass groups (mm)	Length range by group (e.g. species) where given
Mass sample (YN)	Was mass data provided in the article?
Data collection period	Period where movement data was collected in the study
Length of study (days)	Number of days movement data was collected in the study
Study length group	Study length grouped by; continuous multiyear; continuous single year; multi season multiyear; multi season single year; single season multiyear; single season single year.
Season	Season when study was undertaken determined by month and hemisphere. Spring, Summer, Autumn, Winter for temperature species; Wet, Dry for tropical
Movement measurement	What measurement of movement was used as the response variable in the study
MM grouped	Grouped movement measurement
Extrinsic drivers	What abiotic and biotic variables were used as explanatory variables in the study
EX group	Extrinsic drivers grouped
Significant extrinsic drivers	What abiotic and biotic variables were found to be significant drivers of eel movement in the study
Significant EX	What grouped extrinsic variables were found to be significant in the study
Intrinsic drivers	What life history variables were used as explanatory variables in the study
IN group	Intrinsic drivers grouped

Significant intrinsic drivers	What life history variables were found to be significant drivers of eel movement in the study
Significant IN	What grouped intrinsic variables were found to be significant in the study
Intrinsic (YN)	Were intrinsic variables used in the study?

Table S5 Definitions of study length categories

Study length category	Definition
continuous multiyear	frequent and regular collection of data for > 1 year
continuous single year	frequent and regular collection of data for ≤ 1 year
multi season multiyear	seasonal collection of data > 1 year
multi season single year	seasonal collection of data ≤ 1 year
single season multiyear	collection of data in a single season over > 1 year
single season single year	collection of data in a single season within 1 year

Table S6 Response variable categories and reported metrics per variable found across reviewed articles

Response variable categories	Metrics of variables found in reviewed articles
count	catch data, CPUE, counts of detections, counts of individuals
depth	depth, variation in depth
distance	distance travelled, distance to shore
movement activity	diving activity, migration, movement activity, movement duration
spatial distribution	centres of activity (COA), home range, residency, spatial distribution, site fidelity
speed	acceleration, speed

Table S7 Extrinsic variable categories and reported metrics per variable found across reviewed articles

Variable	Number of metrics per variable	Metrics of variables found in reviewed articles
atmospheric pressure	1	atmospheric pressure, delta atmospheric pressure
cloud	1	cloud cover
depth	1	depth
diel	4	day length, diel stage, night duration, time of day
distance	2	distance from shore, distance from tidal channel
flow	6	discharge, increase in water level, water flow, water level, delta water level, delta water flow
habitat	4	habitat type, substrate, vegetation cover, vegetation type
light	1	light level
lunar	4	days after new moon, lunar stage, moon phase, delta moon phase
oxygen	1	dissolved oxygen
pH	1	pH
prey	1	benthic prey
productivity	1	chlorophyll- <i>a</i>
rain	1	rainfall
salinity	1	salinity
season	4	date, month, season, year
slope	2	shore slope, underwater slope
temperature	3	air temperature, water temperature, delta water temperature
wind	4	wind direction, wind force, wind run, wind speed

Table S8 Intrinsic variable categories and reported metrics per variable found across reviewed articles

Variable	Number of metrics per variable	Metrics of variables found in reviewed articles
condition	4	condition factor, fat content, girth, lipid level
growth	2	growth variation, specific growth rate
length	2	head-width, length
maturity	8	age, eye index, fin index, gonado-somatic index, life stage, maturity index, morphological life stage, ocular index
sex	1	sex
species	1	species
mass	3	body mass, mass, weight
wild/culture	1	wild/cultured