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Supporting Information for

Using global remote camera data of a “solitary” species complex to evaluate the drivers of group formation

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29 **Camera trapping studies**

30 The following appendix contains information regarding study specifics of each project that was
31 collated to form this dataset. Key information on camera trap make, model, specific settings and
32 deployment details are recorded.

33 Twining, J.P., Pine marten (Ireland dataset)

34 **Camera make and model used:** Bushnell Trophy Cam HD's and Browning Strike Force HD X

35 **Photographs or video used:** Photographs

36 **Length of video / number of photos in a burst:** 3 photographs

37 **Interval length:** 1 second

38 **Height of deployment:** 150cm

39 **If baited or scented, what bait or scent was used:** Peanuts and sunflower seeds

40 **Number of sites:** 702

41 **Period of sampling:** Each site was sampled for 1 week year-round in 2015 and 2018, and two weeks
42 in August 2020 – March 2021

43 **Length of sampling at each site:** 2 weeks

44 **Additional notes:** Cameras were deployed randomly throughout Northern Ireland. At each site a
45 camera was deployed with a baited squirrel feeder (baited with sunflower seeds and peanuts).

46 Zalewski A. and Wereszczuk A (Poland dataset)

47 **Camera make and model used:** SGN-5220

48 **Photographs or video used:** Videos

49 **Length of video / number of photos in a burst:** 40 seconds

50 **Interval length:** 1 second

- 51 **Height of deployment:** 50 – 100 cm
- 52 **If baited or scented, what bait or scent was used:** eggs and jam
- 53 **Number of sites:** 50
- 54 **Period of sampling:** Year-round
- 55 **Length of sampling at each site:** Year-round
- 56 Wierzbowska, I.A., Loch, J., Pine marten (Poland, Gorce National Park dataset)
- 57 **Camera make and model used:** LTL ACORN: 5210A, 6210MC, 6310MC
- 58 **Photographs or video used:** Photographs and videos 1 photo followed by 60s video)
- 59 **Length of video / number of photos in a burst:** 1 min/1
- 60 **Interval length:** 1 second
- 61 **Height of deployment:** 50 -100 cm
- 62 **If baited or scented, what bait or scent was used:** no bait except two locations – roe and red deer
- 63 carcass from AVC to attract large carnivores
- 64 **Number of sites:** 38
- 65 **Period of sampling:** Year-round in 2014-2017
- 66 **Length of sampling at each site:** 10-12 months
- 67 **Additional notes:** Cameras were deployed randomly throughout Gorce National Park, southern
- 68 Poland, no bait was used, each camera was checked every 3 weeks
- 69 Waggershauser, C.N., Pine marten (Speyside, Scotland dataset)
- 70 **Camera make and model used:** Bushnell Trophy Cam HD's and Browning Strike Force HD X
- 71 **Photographs or video used:** Photographs

- 72 **Length of video / number of photos in a burst:** 3 photographs
- 73 **Interval length:** 1 second
- 74 **Height of deployment:** 30 – 50cm
- 75 **If baited or scented, what bait or scent was used:** Quail carcass, valerian root, pheasant feathers
- 76 **Number of sites:** 40
- 77 **Period of sampling:** Seasonal. “Spring” 2018 from 21st of May to 4th of July and “Spring” 2019 from
78 17th of May to 11th of July. “Winter” 2019 from
- 79 **Length of sampling at each site:** 2 weeks
- 80 **Additional notes:** Cameras were deployed in five sites in the north-west of the Cairngorms National
81 Park, cameras were approximately 1 km apart. Although locations were chosen randomly, distance
82 between cameras within site boundaries and additional constrains (e.g., distance other methods
83 active in the area, accessibility) created a near-regular trapping grid.
- 84 Bamber, J.B., Pine marten (Scotland dataset)
- 85 **Camera make and model used:** Bushnell Nature view and Browning Recon Force Advantage
- 86 **Photographs or video used:** Photographs
- 87 **Length of video / number of photos in a burst:** 3 photographs
- 88 **Interval length:** 5 second
- 89 **Height of deployment:** 40 – 50cm
- 90 **If baited or scented, what bait or scent was used:** Some sites baited with Dear Carrion (Red and
91 Roe).
- 92 **Number of sites:** 180

93 **Period of sampling:** Winter- Spring Monitoring Jan-April. Spring-Autumn April-September

94 **Length of sampling at each site:** Variable: Gralloch sites- minimum 7 days. Feeding Stations 9 weeks.

95 Non-baited cameras, ~12 weeks

96 **Additional notes:** Cameras were deployed in three main ways, 1. Randomly at Gralloch locations,
97 selected for via deer stalker teams, at random cull points. 2. At specific feeding stations, stocked
98 with deer carrion over a 9-week period. 3. At random locations selected for ground nesting bird
99 monitoring, detections here were purely opportunistic.

100 Sites 1 and 2 were not “baited” to attract predators to the camera traps specifically, the camera
101 traps were placed in order to detect which predators choose to feed at these sites, with Pine Marten
102 being a focal species within the study (alongside fox and Badger). Sites 2 had tea strainers with Jam
103 inside deployed in unison to attempt bib pattern ID. Sites 3 were completely random locations but
104 placed at key features for ground nesting birds such as dust baths and water baths, no bait was used
105 at these sites.

106 Manzo, E., & Bartolommei, P., Pine marten (Elba, Italy dataset)

107 **Camera make and model used:** Bushnell Trophy Cam HD’s

108 **Photographs or video used:** Video

109 **Length of video / number of photos in a burst:** 30 sec

110 **Interval length:** 1 minute

111 **Height of deployment:** 0-50cm

112 **If baited or scented, what bait or scent was used:** No bait

113 **Number of sites:** 86

114 **Period of sampling:** Year-round in Feb – July 2020

115 **Length of sampling at each site:** 1 month

116 **Additional notes:** The Elba Island area was divided in cells of 1 km² and cameras were deployed as
117 close as possible to the predefined centroid in this cells, at locations that have suitable tree for the
118 mounting of the traps and where the area around the points is sufficiently open for the camera to
119 have a clear view. At each site cameras was no baited and left for a minimum of 26 days.

120 Fuller, A.K., Perkins K.A., Twining, J.P. (New York, USA dataset)

121 **Camera make and model used:** Reconyx Hyperfire, Bushnell TrophyCams, and

122 **Photographs or video used:** Photographs

123 **Length of video / number of photos in a burst:** 3 photographs

124 **Interval length:** 1 second

125 **Height of deployment:** 1m

126 **If baited or scented, what bait or scent was used:** Beaver meat

127 **Number of sites:** 799

128 **Period of sampling:** Camera traps were deployed for 3 weeks at each site during winter January –
129 March in 2013 – 2021. In 2013 – 2015 608 sites were sampled in the southern region of New York, in
130 2016 – 2018 191 sites were sampled in the northern region of New York, and in 2019 – 2021 603
131 sites were sampled in southern region of New York.

132 **Length of sampling at each site:** 3 weeks

133 **Additional notes:** We deployed cameras using a systematic study design of 15km² grid cells. Within
134 each cell we positioned the camera site adjacent to a tree baited with beaver meat.

135 Stewart, F.E.C. & Fisher, J.T. (central Alberta, Canada dataset)

136 **Camera make and model used:** Reconyx™ models PC85 and PC900

137 **Photographs or video used:** Photographs

138 **Length of video / number of photos in a burst:** 3 photographs

139 **Interval length:** 1 second

140 **Height of deployment:** 1m

141 **If baited or scented, what bait or scent was used:** O’Gorman’s LDC scent lure and beaver meat

142 **Number of sites:** 64

143 **Period of sampling:** *Camera traps were deployed for two sampling seasons – January through June*
144 *2014, and January through April 2016 – for a total of 10 monthly surveys;*

145 **Length of sampling at each site:** 10 months

146 **Additional notes:** *We deployed cameras using a systematic study design of 4 x 4 km grid cells. Within*
147 *each cell we positioned the camera site at a used wildlife trail, accessible by road or hiking trail.*

148 Fisher, J.T. (Willmore Wilderness, Alberta, Canada dataset)

149 **Camera make and model used:** *Reconyx™ models RM30 and PM30*

150 **Photographs or video used:** Photographs

151 **Length of video / number of photos in a burst:** 3 photographs

152 **Interval length:** 1 second

153 **Height of deployment:** 1.2m

154 **If baited or scented, what bait or scent was used:** O’Gorman’s LDC scent lure and beaver meat

155 **Number of sites:** 66

156 **Period of sampling:** *We sampled 30 sites December 2006 – March 2007 and a different set of 36 sites*
157 *in December 2007 – March 2008, for a total of 66 sites.*

- 158 **Length of sampling at each site:** 4 months
- 159 Masseloux, J, Gerber, B.D. (Cat Tien NP, Vietnam dataset)
- 160 **Camera make and model used:** Browning Strike Force Pro XD
- 161 **Photographs or video used:** Photographs
- 162 **Length of video / number of photos in a burst:** 3 photographs
- 163 **Interval length:** 10 seconds
- 164 **Height of deployment:** 30-70 cm off the ground
- 165 **If baited or scented, what bait or scent was used:** Unbaited
- 166 **SNumber of sites:** 75
- 167 **Period of sampling:** June 2019 to January 2020
- 168 **Length of sampling at each site:** about 102 days per site
- 169 Li, S., Wang, D., Bu, H., McShea, W. Yellow-throated marten (Min Shan, China dataset)
- 170 **Camera make and model used:** Ltl-Acorn 6210, Loreda 510/710, Reconyx PC900
- 171 **Photographs or video used:** Photographs and video
- 172 **Length of video / number of photos in a burst:** 3 photographs + 10 s video
- 173 **Interval length:** 1 second
- 174 **Height of deployment:** 30 – 70cm
- 175 **If baited or scented, what bait or scent was used:** Scent lure (**Carman's Magna-Glan Lure**)
- 176 **Number of sites:** 790
- 177 **Period of sampling:** 2012-2018

- 178 **Length of sampling at each site:** ~3 months
- 179 **Additional notes:** Cameras were mostly deployed across a 1 km x 1 km sampling array at each
180 surveyed PA, with 1-2 camera stations in each 1 km² cell at >300 m apart from each other.
- 181 Li, S., Wang, D., McShea, W. Yellow-throated marten (Qionglai Shan, China dataset)
- 182 **Camera make and model used:** Ltl-Acorn 6210, Loreda 710
- 183 **Photographs or video used:** Photographs and video
- 184 **Length of video / number of photos in a burst:** 3 photographs + 10 s video
- 185 **Interval length:** 1 second
- 186 **Height of deployment:** 30 – 80cm
- 187 **If baited or scented, what bait or scent was used:** Scent lure (**Carman's Magna-Glan Lure**)
- 188 **Number of sites:** 726
- 189 **Period of sampling:** 2015-2018
- 190 **Length of sampling at each site:** ~3-6 months
- 191 **Additional notes:** Cameras were mostly deployed across a 1 km x 1 km sampling array at each
192 surveyed PA, with 1-2 camera stations in each 1 km² cell at >300 m apart from each other. Covers
193 both forest (elevation approximately < 3400 m) and alpine (elevation approximately 3400-4500 m,
194 focusing on snow leopard habitat) ecosystem.
- 195 Ronglarp, S. & McShea, W. (Thailand dataset).
- 196 **Camera make and model used:** Bushnell
- 197 **Photographs or video used:** Photographs
- 198 **Length of video / number of photos in a burst:** 3 photographs
- 199 **Interval length:** 1 second

200 **Height of deployment:** 30 – 50cm

201 **If baited or scented, what bait or scent was used:** none

202 **Number of sites:** 50

203 **Period of sampling:** 3/2017 – 12/2017

204 **Length of sampling at each site:** ~ 30 days

205

206 Mcshea, W. & Watton, M. (Thailand dataset).

207 **Camera make and model used:** reconyx

208 **Photographs or video used:** Photographs

209 **Length of video / number of photos in a burst:** 3 photographs

210 **Interval length:** 1 second

211 **Height of deployment:** 30 – 50cm

212 **If baited or scented, what bait or scent was used:** scent lure

213 **Number of sites:** 273

214 **Period of sampling:** 10/2009- 2/2010; 10/2010-3/2011; 12/2011-4/2012

215 **Length of sampling at each site:** ~30 days

216

217 Mcshea, W. & Wang, F. (Liang Shan, China dataset)

218 **Camera make and model used:** Acorn

219 **Photographs or video used:** Photographs

220 **Length of video / number of photos in a burst:** 3 photographs

221 **Interval length:** 1 second

222 **Height of deployment:** 30 – 50cm

223 **If baited or scented, what bait or scent was used:** scent lure

224 **Number of sites:** 50

225 **Period of sampling:** 4/2016 – 12/2017

- 226 **Length of sampling at each site:** ~30 days
- 227 Boyce, A.J. (Borneo dataset)
- 228 **Country:** Borneo
- 229 **Camera make and model used:** Bushnell Trophy Cam HD Aggressor (Sabah) and Reconyx Hyperfire 2
- 230 (Sarawak)
- 231 **Photographs or video used:** Photographs
- 232 **Length of video / number of photos in a burst:** 3 photographs
- 233 **Interval length:** 1 second/1 second
- 234 **Height of deployment:** 40 – 80cm
- 235 **If baited or scented, what bait or scent was used:** Unbaited in Sabah, Powder River Cat Call Scent
- 236 Lure used in Sarawak.
- 237 **Number of sites:** 40 in Sabah
- 238 **Period of sampling:** Year round
- 239 **Length of sampling at each site:** variable up to 5 months
- 240 **Additional notes:** Cameras were deployed across elevational gradients in Sabah and Sarawak,
- 241 cameras were at least 250 meters (by GPS) from each other. Cameras were placed along very rarely
- 242 used trails.
- 243 Wearn, O.R., Yellow-throated marten (Borneo dataset)
- 244 **Camera make and model used:** Reconyx HC500
- 245 **Photographs or video used:** Photographs
- 246 **Length of video / number of photos in a burst:** 10 photographs

- 247 **Interval length:** 0.5 seconds (0.2 second recovery between triggers)
- 248 **Height of deployment:** 30 – 50cm
- 249 **If baited or scented, what bait or scent was used:** Unbaited
- 250 **Number of sites:** 592
- 251 **Period of sampling:** April 2011 to February 2014
- 252 **Length of sampling at each site:** 50 days on average
- 253 **Additional notes:** Cameras were deployed according to a strict random design, with random
254 locations pre-marked in the field and cameras later placed within 5 m of the markers. The 5 m
255 deviation allowed obvious obstruction to the field of view (e.g. tree buttresses, rocks, dense or
256 vegetation) to be avoided. Vegetation cutting was kept to a minimum.
- 257 Haysom, J., (Borneo dataset)
- 258 **Camera make and model used:** Reconyx Hyperfire HC500
- 259 **Photographs or video used:** Photographs
- 260 **Length of video / number of photos in a burst:** 3 photographs
- 261 **Interval length:** 1 second interval
- 262 **Height of deployment:** 30 – 50c m (ground); 10-52 m (canopy)
- 263 **If baited or scented, what bait or scent was used:** Unbaited
- 264 **Number of sites:** 50, all comprising one ground camera and one canopy camera (so 100 cameras)
- 265 **Period of sampling:** Oct 2017-Mar 2018 (logged forest); Aug 2018-Jun 2019 (unlogged); Jul-Sep 2019
266 (logged)
- 267 **Length of sampling at each site:** 3-10 months (depending on malfunctions)

268 **Additional notes:** In the canopy, martens were detected at heights between 19-34 m

269 Cosby, O. et al., (Borneo dataset)

270 **Camera make and model used:** Reconyx HyperFire, Bushnell Trophy Cam HD's

271 **Photographs or video used:** Photographs

272 **Length of video / number of photos in a burst:** 3-5 (depending on camera model, Bushnell 3,

273 Reconyx 5)

274 **Interval length:** 1 second (Bushnell), no delay (Reconyx)

275 **Height of deployment:** ~30 cm (knee height)

276 **If baited or scented, what bait or scent was used:** O'Gorman's Powder River Cat Call

277 **Number of sites:** 50

278 **Period of sampling:** October 2016-December 2019

279 **Length of sampling at each site:** continuous (checked every 2-months)

280 **Additional notes:** In October 2016, we established 40 cameras within the protected areas (LEWS)

281 and community forested areas - surrounding Iban territories - based on accessibility, minimum

282 spacing between plots (350-500 m). Spacing between cameras was constrained by another

283 component of the study (fruit tree phenology surveys). Over subsequent trips (February 2017,

284 November 2017, and January 2018), our team deployed 10 additional cameras to increase sampling

285 effort. We identified all camera-trap images to species using the Smithsonian eMammal repository

286 (eMammal.org). The eMammal platform groups photos into sequences when individual images are

287 taken at intervals <1 min apart.

288 Fuller, A.K., Perkins K.A., Twining, J.P. (Ecuador dataset)

289 **Camera make and model used:**, Bushnell TrophyCams

290 **Photographs or video used:** Photographs

291 **Length of video / number of photos in a burst:** 3 photographs

292 **Interval length:** 1 second

293 **Height of deployment:** 1m

294 **If baited or scented, what bait or scent was used:** Bait stick with vanilla scent lure

295 **Number of sites:** 103

296 **Period of sampling:** Camera traps were deployed for 10 weeks at each site during August –
297 November in 2016, and April – August in 2017. In 2016 70 sites were sampled, in 2017 103 sites
298 were sampled in the Choco-Andean region of Ecuador.

299 **Length of sampling at each site:** 10 weeks

300 **Additional notes:** The survey was conducted at 70 sites in 2016 and repeated at 103 sites in 2017
301 using the same method. Trail cameras were deployed on trees approximately 50cm off the ground
302 and placed facing either north or south to avoid direct sunlight during sunrise and sunset. A one-
303 meter-tall bait stick was positioned approximately five meters in front of each camera with a vanilla
304 scent lure applied to the top of the stick. Where possible two cameras were used at each site in
305 order to increase the probability of detection

306 Cove, M.V., Pardo, L. (Tayra, Costa Rica and Columbia — Pardo et al., 2016; Fernandez et al., 2019)

307 **Camera make and model used:** Scout Guards, StealthCams, Reconyx HC500 Hyperfire

308 **Photographs or video used:** Photographs

309 **Length of video / number of photos in a burst:** 3-10 photographs

310 **Interval length:** 1 second

311 **Height of deployment:** 25 – 30cm

312 **If baited or scented, what bait or scent was used:** sardines

313 **Number of sites:** 46

314 **Period of sampling*:** Costa Rica = Nov-Dec 2009; March-July 2010, Oct-Dec 2010, Jan-May 2011,
315 June-August 2016, 2018.

316 **Colombia** = Finca, La Fortuna, San Carlos March-april 2015, and Finca Ucraina, Acacias from Dec
317 2015 Feb 2016.

318 *this information is specific for the sampling effort of the place where the species was detected, but
319 there are several more sites where we did not detect the species and therefore not considered in
320 above effort. If this info is needed then Costa Rica ran from June 2009-July 2011 and again in June-
321 August 2016 and 2018 in La Selva Biological Station (Fernandez et al., 2019), and Colombia from
322 September 2014 to January 2016.

323 **Length of sampling at each site:** 2 weeks in Costa Rica, 30 days in Colombia

324 **Additional notes:** Cameras (Reconyx HC500 Hyperfire™, United States [US]) were active for a
325 minimum of 30 days at each site and were configured according to the following criteria: high
326 sensitivity, one-second intervals between consecutive photographs (3 per trigger), no delay or quiet
327 period between triggers, a minimum distance of 1.5 m from an animal's potential path, and a height
328 of 25–30 cm depending on the terrain. All cameras were fixed to trees or wooden poles (in the case
329 of cameras inside plantations) with a steel security cable (Python™, US). Arboreal and other species
330 not likely detected by camera trap were recorded opportunistically by direct observations, but were
331 not use for analysis. Camera traps were spaced ~250 m apart along transects to follow the linear
332 nature of the vegetation type and were set close to animal trails where possible.

333 Manka, S.G Peperpot (Suriname dataset)

334 **Camera make and model used:** Reconyx PC 800

- 335 **Photographs or video used:** Photographs
- 336 **Length of video / number of photos in a burst:** 5 photographs
- 337 **Interval length:** none - re-triggering immediately if the animal was still in view
- 338 **Height of deployment:** 40 cm
- 339 **If baited or scented, what bait or scent was used:** n/a
- 340 **Number of sites:** 20
- 341 **Period of sampling:** April 2015 - November 2016
- 342 **Length of sampling at each site:** 28 days, but some cameras were left at the same site
- 343 Hidalgo-Mihart et al. (Quintana Roo, Mexico dataset)
- 344 **Camera make and model used:** 30 Digital Cuddeback Attack, Non Typical, Inc., De Pere, WI; 26
345 Digital LTL Acorn 5210 A, Old-Boys Outdoors, Stone Mountain, GA.
- 346 **Photographs or video used:** Photographs
- 347 **Length of video / number of photos in a burst:** Photographs, unknown burst
- 348 **Interval length:** NA
- 349 **Height of deployment:** average height of 50 cm above ground
- 350 **If baited or scented, what bait or scent was used:** Lured with a sardine can.
- 351 **Number of sites:** 56 camera trap stations
- 352 **Period of sampling:** January to June and July to November, 2012 and 2013.
- 353 **Length of sampling at each site:** at least 65 days per year for a total effort of 7,280 camera days.
- 354 **Additional notes:** Camera trap stations were installed in roads and trails inside tropical evergreen
355 forests and the mature second-growth forests of the region. Authors set 56 camera trap stations (30

356 Digital Cuddeback Attack, Non Typical, Inc., De Pere, WI; 26 Digital LTL Acorn 5210 A, Old-Boys
357 Outdoors, Stone Mountain, GA) programmed to take photos (number of burst per trigger unknown).
358 The cameras were placed at an average height of 50 cm above ground, sometimes (unknown
359 number) the stations were lured with a sardine can. The cameras were active 24 h per day for at
360 least 65 days per year for a total effort of 7,280 camera days.

361 Hidalgo-Mihart *et al.* (Nicté-Há, Mexico dataset)

362 **Camera make and model used:** at least 20 digital camera traps of different models (Wildview, Wild
363 View Web Products Inc., Greenfield, MN, USA; Cuddeback, Non Typical Inc., De Pere, WI, USA;
364 Moultrie, Moultrie Products, LLC, Birmingham, AL, USA; Acorn, LTL Acorn Outdoors, Green Bay, WI,
365 USA; Panthera cam Models IV and V).

366 **Photographs or video used:** photos.

367 **Length of video / number of photos in a burst:** Unknown.

368 **Interval length:** Unknown

369 **Height of deployment:** 50 cm above the ground.

370 **If baited or scented, what bait or scent was used:** lured with a sardine can.

371 **Number of sites:** 56 camera trap stations

372 **Period of sampling:** February to June, 2016 and 2017.

373 **Length of sampling at each site:** A minimum of 45 days (sampling effort varied at each survey and
374 over the study period due to equipment failures and losses because of vandalism and flooding.

375 **Additional notes:** From 2010 to 2017, authors performed 10 camera trap surveys along in the
376 wetlands of southwestern Campeche. The location, intensity, and timing of the surveyed areas were
377 established according to the information required by the managers of the natural protected areas of
378 the region. Each one of the camera trap surveys consisted of at least 20 digital camera traps of

379 different models (Wildview, Wild View Web Products Inc., Greenfield, MN, USA; Cudddeback, Non
 380 Typical Inc., De Pere, WI, USA; Moultrie, Moultrie Products, LLC, Birmingham, Al, USA; Acorn, LTL
 381 Acorn Outdoors, Green Bay, WI, USA; Pantheracam Models IV and V) operating for a minimum of 45
 382 days (sampling effort varied at each survey and over the study period due to equipment failures and
 383 losses because of vandalism and flooding). During each one of the surveys, authors tried to place the
 384 cameras at least 1 km apart from one another and 50 cm above the ground on trees. Camera traps
 385 were placed close to trails (never inside the vegetation) where they found evidence of use by
 386 medium-sized or large mammals.

387 Villafaña-Trujillo et al. (Nicté-Há, Mexico dataset)

388 **Camera make and model used:** Wildview, Model STC-WV40NG, Texas; Browning Strike Force HD
 389 850 Sub Micro Series, Birmingham, Alabama.

390 **Photographs or video used:** Photographs and videos.

391 **Length of video / number of photos in a burst:** Photographs (Wildview - three pictures per burst;
 392 Browning - five pictures per burst) and videos (15 seconds – 2016; 10 seconds – 2017).

393 **Interval length:** unknown.

394 **Height of deployment:** height of approximately 25–45 cm, and height of 100–120 cm.

395 **If baited or scented, what bait or scent was used:** 2016 - Simple stations: Lure to attract mustelids
 396 (only one of these lures was used per station: Mink Lure Supreme, Long Distance Call Lure,
 397 Marsyada's; Allagash Fur Call, Cronk's; Mink Master - Mink Gland Lure, Caven's; or Weasel Lure,
 398 Hawbaker's; all manufactured by Minnesota Trapline Products, Inc.). Double stations: The rigs were
 399 lured with a partially opened sardine can, chicken pieces, apples, bananas, honey, and one of the
 400 mentioned lures. 2017 - Simple stations: Lure to attract mustelids (Salmon Oil, Caven's, Minnesota
 401 Trapline Products, Inc.). Double stations: The rigs were lured with a partially opened sardine can,
 402 chicken pieces, apples, bananas, honey, and salmon oil.

403 **Number of sites:** 49 camera trap stations.

404 **Period of sampling:** February to June, 2016 and 2017.

405 **Length of sampling at each site:** ten months.

406 **Additional notes:** The camera-trap survey conducted from 2016 to 2017 in the UEM Nichte-Há by
407 ÁJV-T was specifically designed to obtain tayra records. Due to the characteristics of the vegetation,
408 the trails that already existed within the UEM were used. The camera-trap stations placed in the
409 same trail had a separation of 1 km. The literature reports a strong arboreal tendency in tayra
410 (Presley 2000); for that reason, the camera-trap stations were placed inside the vegetation, at a
411 distance between 7 and 12 m from the trails.

412 In 2016 (from March to May) we placed 25 camera-trap stations each with a single digital infrared
413 trail camera (Wildview, Model STC-WV40NG, Grand Prairie, Texas) at a height of approximately 25–
414 45 cm, cameras were set to obtain three pictures per burst. Each station had a partially opened
415 sardine can at about 4 m in front of each camera, and a stick with lure to attract mustelids (only one
416 of these lures was used per station: Mink Lure Supreme, Long Distance Call Lure, Marsyada's;
417 Allagash Fur Call, Cronk's; Mink Master - Mink Gland Lure, Caven's; or Weasel Lure, Hawbaker's; all
418 manufactured by Minnesota Trapline Products, Inc.). In addition, we placed six camera-trap stations
419 composed of two digital infrared trail camera (Wildview, Model STC-WV40NG, Texas) at a height of
420 100–120 cm; the cameras (one camera were programmed to obtain three pictures per burst, the
421 other camera were set to record a 15 seconds video) were focused to a rig (a modification of the
422 method used by Magoun et al. 2008) designed to obtain front and side images and external
423 morphometric measures of the photographed specimens. The rigs were lured with a partially
424 opened sardine can, chicken pieces, apples, bananas, honey, and one of the mentioned lures.

425 In 2017 (from February to May) we placed 24 camera-trap stations with a single digital infrared trail
426 camera (Wildview, Model STC-WV40NG, Texas) at a height of approximately 25–45 cm, cameras

427 were set to obtain three pictures per burst. Each station had a partially opened sardine can at about
428 4 m in front of each camera, and a stick with lure to attract mustelids (Salmon Oil, Caven's,
429 Minnesota Trapline Products, Inc.). In addition, we placed five camera-trap stations composed of
430 two digital infrared trail cameras (Browning Strike Force HD 850 Sub Micro Series, Birmingham,
431 Alabama) at a height of 100–120 cm; the cameras (one camera were programmed to obtain pictures
432 five per burst, the other camera were set to record a 10 seconds video) were focused to a rig (with
433 the same specifications of the 2016 survey). The rigs were lured with a partially opened sardine can,
434 chicken pieces, apples, bananas, honey, and salmon oil.

435 Kolowski & Alonso (Peru, Peruvian Amazon dataset)

436 **Camera make and model used:** Reconyx RC-55 digital infrared trail cameras; Reconyx Inc., Holmen,
437 Wisconsin, USA.

438 **Photographs or video used:** Photographs

439 **Length of video / number of photos in a burst:** unknown.

440 **Interval length:** unknown.

441 **Height of deployment:** approximately 25–45 cm.

442 **If baited or scented, what bait or scent was used:** non-commercial brand, homemade.

443 **Number of sites:** 23.

444 **Period of sampling:** April to September 2008.

445 **Length of sampling at each site:** six months.

446 **Additional notes:** The authors established a grid of camera stations specifically designed to
447 characterize and monitor the local ocelot population. Due to the complete lack of roads and human-
448 made trails, they opened 35 km of trails, approximately 1 m in width, which were maintained
449 vegetation-free throughout the study. Along these trails they established 23 camera stations (each

450 with two Reconyx RC-55 digital infrared trail cameras; Reconyx Inc., Holmen, Wisconsin, USA)
451 positioned on either side of the trail to obtain photos (unknown number of pictures per burst) of
452 both sides of the target animal. Camera stations were always placed either at the intersection or
453 coincidence of their trail with an existing game trail. Cameras were placed 0.5–2.0 m off the trail at a
454 height of approximately 25–45 cm, authors placed a stick that contained lure (noncommercial brand,
455 homemade) in front/near of their cameras. The adjacent stations were separated by an average of
456 1122 m.

457 Paviolo et al. (Yabotí, Argentina dataset)

458 **Camera make and model used:** Camtrakker (Camtrakker, Watkinsville, Georgia), Leaf Rivers Trail
459 Scan Model C-1 (Vibra Shine, Taylorsville, Mississippi), TrailMACs 35mm Standard Game (Trail Sense
460 Engineering, LLC, Middletown, Delaware), and Trapacamera (CIETEC, Sao Paulo, Brazil)

461 **Photographs or video used:** photos.

462 **Length of video / number of photos in a burst:** Unknown.

463 **Interval length:** Unknown.

464 **Height of deployment:** Unknown.

465 **If baited or scented, what bait or scent was used:** Unbaited.

466 **Number of sites:** 47 camera stations.

467 **Period of sampling:** March to December 2005.

468 **Length of sampling at each site:** 90 to 96 days.

469 **Additional notes:** Authors conducted different surveys in several locations ($n = 4$), in each study site,
470 they placed between 34 and 47 camera stations. Each station consisted of a pair of camera traps
471 facing each other and operating independently (as far as I know, stations were unbaited). The
472 stations were located on infrequently used dirt roads or small trails opened in the forest and were

473 distributed at regular intervals with the purpose of evenly covering the entire surveyed area.
474 Authors used camera-traps of different brands and models. The equipment consisted of 2
475 Camtrakker (Camtrakker, Watkinsville, Georgia), 50 Leaf Rivers Trail Scan Model C-1 (Vibra Shine,
476 Taylorsville, Mississippi), 30 TrailMACs 35mm Standard Game (Trail Sense Engineering, LLC,
477 Middletown, Delaware), and 20 Trapacamera (CIETEC, Sao Paulo, Brazil) scouting cameras. The full
478 surveys consisted of a period of 90–96 days.

479 Xavier da Silva et al. (Iguaçu, Brazil dataset)

480 **Camera make and model used:** Brand unknown.

481 **Photographs or video used:** Unknown.

482 **Length of video / number of photos in a burst:** Unknown.

483 **Interval length:** Unknown.

484 **Height of deployment:** 40 cm above ground level.

485 **If baited or scented, what bait or scent was used:** Unbaited.

486 **Number of sites:** 37 camera stations.

487 **Period of sampling:** July to October 2009, from October 2010 to January 2011, and from February to
488 May 2013.

489 **Additional notes:** The authors installed 37 camera stations, they placed two camera-traps (brand
490 unknown) 40 cm above ground level. They monitored all the sites simultaneously during three
491 periods of three months each in three different years (from July to October 2009, from October 2010
492 to January 2011, and from February to May 2013).

493 Mortelliti, A. and B. E. Evans (Fisher and American marten, Maine, USA)

494 **Camera make and model used:** Bushnell Trophy Cam E2 and E3

- 495 **Photographs or video used:** Photographs
- 496 **Length of video / number of photos in a burst:** 1 photograph
- 497 **Interval length:** 3 seconds (minimum setting, in practice varies from 1-4 seconds between images of
498 apparently continuous activity)
- 499 **Height of deployment:** 30 – 40cm
- 500 **If baited or scented, what bait or scent was used:** Bait = ~20g beaver meat (*Castor canadensis*)
501 placed in a suet bird feeder cage (example brand *C&S Green Wild Bird EZ Fill Suet Cake Feeder*), set
502 2-4m in front of the camera wired to a tree trunk. Scent lure = skunk and Vaseline based generic call
503 lure, locally made in Maine (Jerry Braley, Kenduskeag, ME)
- 504 **Number of sites:** 197 sites (each composed of three baited and lured cameras, spaced 100m apart.
505 (For example, the site labelled “S01_01” had three camera+bait microsites, “S01_01_1”,
506 “S01_01_2”, and “S01_01_3” set in a ~straight transect spanning a total of 200 m from the first to
507 the third camera)
- 508 **Period of sampling:** Summer (June-Sept) and Winter (January-April) from June 2017 to August 2020.
509 (Almost all sites were sampled for one summer and for the following winter [4 unable to reset in
510 winter], while some were also revisited for additional summers + winters of data collection).
- 511 **Length of sampling at each site:** 2-4 weeks
- 512 Gerber, B.D., T.J. McGreevy, C. Brown, A.E. Mayer, and L.S. Ganoe, Fisher (Rhode Island USA dataset)
- 513 **Camera make and model used:** Bushnell Trophy Cam Aggressor Low Glow and Browning Strike
514 Force Pro XD
- 515 **Photographs or video used:** Photographs
- 516 **Length of video / number of photos in a burst:** 3 photographs

- 517 **Interval length:** 10 seconds
- 518 **Height of deployment:** ~ 50cm
- 519 **If baited or scented, what bait or scent was used:** Caven's Gusto Lure (Skunk-based scent lure)
- 520 **Number of sites:** 100
- 521 **Period of sampling:** 16 Jan 2018 – 18 May 2018; 13 June 2018 – 5 Oct 2018; 8 Nov 2018 – 10 Apr
522 2019; 10 Jun 2019 – 25 Oct 2019; 2 Dec 2019 – 27 Mar 2020; 8 June 2020 – 22 Sept 2020
- 523 **Length of sampling at each site:** Winter 2018: ~12 weeks; Summer 2018; Summer 2018: 6 weeks;
524 Winter 2019: 20 weeks; Summer 2019: 6 weeks; Winter 2020: 6 weeks; Summer 2020: 6 weeks
- 525 **Additional notes:** Sampling design was adapted throughout the study. During 1st season (winter
526 2018) we had 40 sites with 1 camera each. Summer 2018 we had 100 sites with 1 camera each.
527 Winter 2019 we used 20 sites with either 2 or 3 cameras per site. Remaining seasons (Summer 2019
528 through Summer 2020) we had 100 sites with 2 cameras per site.
- 529 Akins, J.R., Wolverine (Washington, USA dataset)
- 530 **Camera make and model used:** Multiple Reconyx, Bushnell and Browning
- 531 **Photographs or video used:** Both
- 532 **Length of video / number of photos in a burst:** 3-5 photographs
- 533 **Interval length:** RapidFire
- 534 **Height of deployment:** 50 to 150cm approx..
- 535 **If baited or scented, what bait or scent was used:** Beaver, deer, elk
- 536 **Period of sampling:** 5/29/2009 to 4/28/2010; Year-round from 3/11/2016 to January 2023
- 537 **Length of sampling at each site:** Variable – one winter to multiple years

538 Resource patchiness metric

539 **Table S1** Table summarising the literature for seven species of the *Martes* complex used to calculate
 540 resource dispersion metrics for each species with locality specific data where possible. Where FO% is
 541 the reported frequency of occurrence in the diet, homogenously distributed resources are all small
 542 vertebrate prey (e.g., small mammals, birds, and reptiles), and patchily distributed resources are
 543 comprised of invertebrates, fruit, and carrion.

Species	Country	Homogenously distributed prey (FO%)	Patchily distributed prey (FO%)	Resource dispersion metric	References
<i>Eira barbara</i>	Costa Rica	52.6	99.9	0.66	[1]
<i>Gulo gulo</i>	USA	108.0	129.0	0.54	[2]
<i>Martes americana</i>	USA	112.8	37.7	0.25	[3]
<i>Martes americana</i>	USA	104.1	14.7	0.12	[4]
<i>Martes flavigula</i>	China	56.9	144.2	0.72	[5]
<i>Martes foina</i>	Italy	95.0	56.9	0.37	[6]
<i>Martes foina</i>	Poland	411.8	363.8	0.50	[7]
<i>Martes martes</i>	Ireland	97.8	163.4	0.62	[8]
<i>Martes martes</i>	Italy	83.7	53.9	0.39	[9]
<i>Martes martes</i>	Poland	117.5	52.9	0.31	[10]
<i>Martes martes</i>	Scotland	51.7	49.9	0.49	[11]
<i>Pekania pennanti</i>	USA	138.8	76.6	0.36	[12]
<i>Pekania pennanti</i>	USA	105.0	39.0	0.27	[13]

544

545 Bait covariate parameterization

546 We parametrized our “bait” covariate in four different ways to explore the differences in impact of
 547 food rewards, scent-based lures, and no use of bait/lure on probability of detecting animals in

548 groups, and then conducted model selection to see which parameterization was best supported by
 549 the data. We considered 5 different parameterizations / models:

550 H0 – Null (attractant factor not included)

551 H1 – All different (3 level factor, 1 = food reward, 2 = scent lure, 3 = none)

552 H2 – Attractant (2 level factor, 1 = food/scent lure, 2 = none)

553 H3 – Food different (2 level factor, 1 = food reward, 2 = scent lure and none)

554 H4 – Lure different (2 level factor, 1 = lure only, 2 = food reward and none).

555 We conducted AIC-based model comparison of these five candidate models to identify the best
 556 parameterization of attractant to use in the analysis. The results of which can be seen below in Table
 557 S2.2.

558 We see that H2, the attractant model that does not distinguish between bait and lure, is most
 559 supported. Therefore, based on this evidence we used this parameterization of the bait covariate in
 560 our modelling.

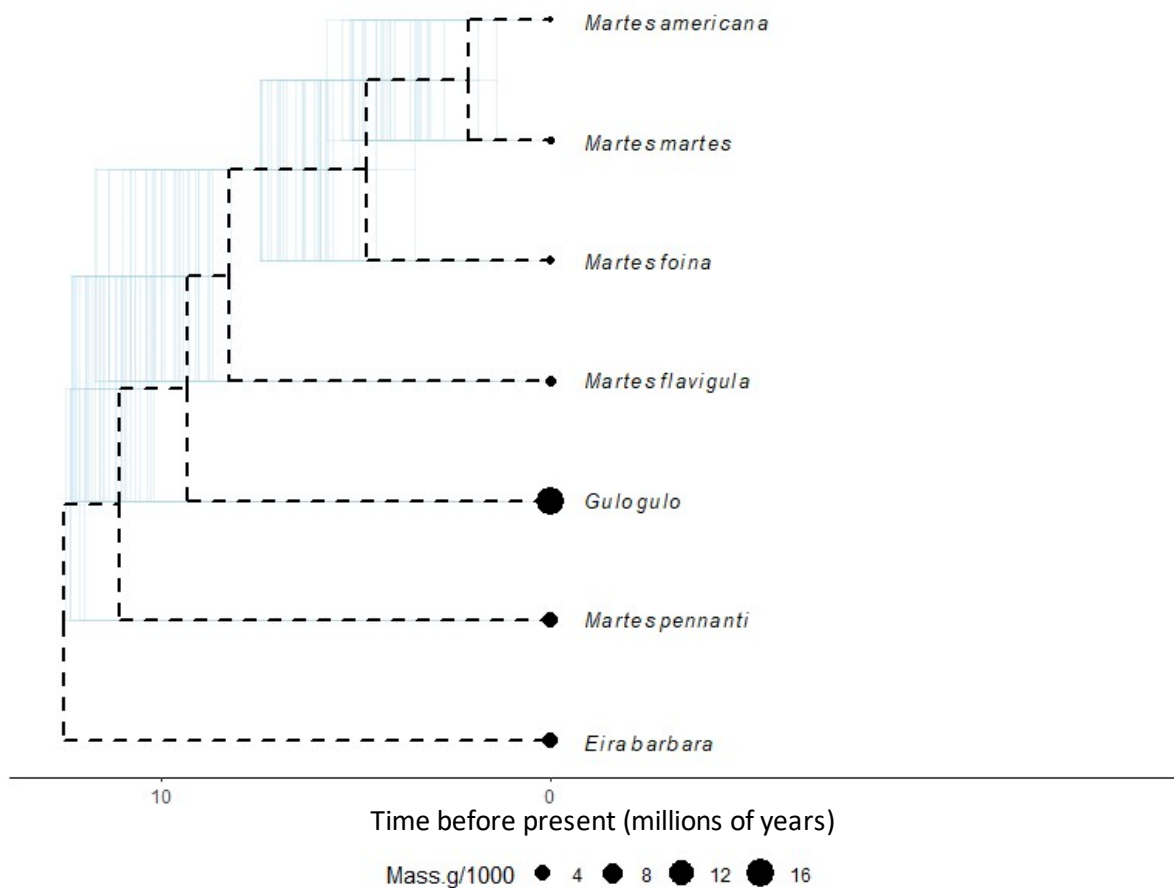
561 **Table S2.** AIC-based model selection results examining reparameterization of bait covariate in
 562 Martes complex group formation analysis to identify potential differences in response to food
 563 rewards vs scent lures. The global model (minus body mass) is fixed in each model and are not
 564 shown. Only models with $\Delta_{AIC} < 5$ are displayed. Redundant parameters (the additional level in H2 –
 565 all different model) are displayed.

Model	K	-2logL	AIC	Δ_{AIC}	ω_{AIC}
H2 – attractant model	9	-1276.47	2570.94	0.00	0.61
H1 – all different	10	-1276.46	2572.91	1.97	0.23
H4 – Lure different	9	-1278.20	2574.40	3.46	0.11

566

567 Phylogenetic contrasts

568

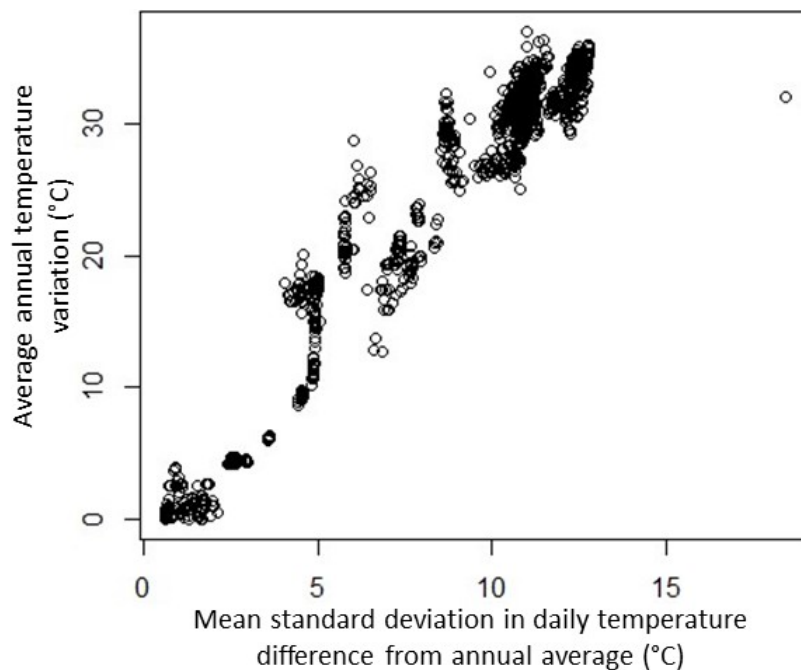


569

570 **Figure S1.** Phylogenetic tree of *Martes* complex showing relatedness of the different species
 571 compared in this analysis.

572 **Assessment of collinearity in covariates using variance inflation factors**
 573 Assessment of collinearity using variance inflation factors demonstrated strong collinearity between
 574 the winter severity metric (average annual temperature variation) and the proxy for resource
 575 constancy (mean standard deviation in daily temperature difference from annual average, VIF =
 576 7.59, with > 3 being colinear, and >5 being highly colinear, Zuur *et al.* 2009). Visual inspection of the
 577 data supported this suggested collinearity (see Figure S2.1). Examination using Spearman's rank
 578 correlation also provided evidence of strong correlation between these two covariates with
 579 Spearman's $p = 0.84$.

580



581

582 **Figure S2.** Plot showing the correlation between winter severity metric (average annual temperature
 583 variation) and the resource constancy metric (mean standard deviation in daily temperature
 584 difference from annual average) displaying high collinearity between the two covariates. These
 585 covariates had a variance inflation factor of 7.59 resulting in the resource constancy metric being
 586 dropped from the analysis.

587 Full model list

588 **Table S3.** Full model list with all parameter combinations considered.

Model Number	Method (baited/unbaited)	Ordinal day (linear)	Ordinal day (quadratic)	GPP	Weight	Resource patchiness	Winter severity/Resource constancy	Winter severity / Resource constancy:weight
1	X	X	X					
2	X	X	X			X		
3	X	X	X		X			
4	X	X	X				X	
5	X	X	X	X				

6	X	X	X			X	X	
7	X	X	X		X	X		
8	X	X	X		X		X	
9	X	X	X	X	X			
10	X	X	X	X			X	
11	X	X	X		X	X	X	
12	X	X	X		X		X	X
13	X	X	X	X		X	X	
14	X	X	X	X	X		X	
15	X	X	X	X	X	X		
16	X	X	X	X	X		X	
17	X	X	X		X	X	X	X
18	X	X	X	X	X	X	X	
19	X	X	X	X	X		X	X
20	X	X	X	X	X	X	X	X

589

590 **Model selection results**591 **Table S4.** Model selection results for variables influencing the probability of martens and close592 relatives (*Martes complex*) being detected in groups from a global dataset from 17 countries

593 collected from 2000 – 2020. Linear and quadratic forms of day are fixed. Year and region are fixed

594 random level effects on all models and are not shown. Only models with $\Delta_{AIC} < 5$ are displayed.

595 Redundant parameters (resource productivity) are displayed. The top model after removal of the

596 redundant parameter is highlighted in bold.

Model	K	-2logL	AIC	Δ_{AIC}	ω_{AIC}
Resource patchiness + bait + day + day ² + resource productivity + weight + winter severity + weight: winter severity	11	-3238.95	6499.90	0.00	0.52

Resource patchiness + bait + day + day ² + weight + winter severity + weight: winter severity	10	-3240.06	6500.12	0.22	0.47
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597

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