INTELLIGENSICUS

Master Research Proposal

RESEARCH PROGRAM PROPOSAL

Imran Stanton Cooper

MARINE CEPHALOPOD INSECT CORVID CETACEAN APE ELEPHANT BEAR DOMESTIC

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Intelligensicus Library

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01 ABSTRACT

Intelligensicus is a long-horizon research program whose single objective is to produce a measurable, lasting rise in the intelligence, well-being, and survival of wild animal populations, carried forward by the populations themselves through their own cultural transmission across generations. The program gives wild populations the conditions and the scaffolding by which they raise their own capability and keep it. Training individual animals as a novelty is beside the point. The method rests on a single thesis: intelligence rises when a population gains abundance, and with it spare time, docility, and the room to work problems out; and the decisive step comes from scaffolding self-authored capability, so a population improves its own conditions and transmits the improvement onward. The program runs across nine animal tracks grouped by method, from stationary box and small-rig work with marine invertebrates, insects, and corvids, to field study with marine mammals, great apes and primates, elephants, bears, and the wild and domestic forms of the fox, dog, cat, and rodent lineages. Every track is welfare-first, conservation-aligned, and run in a graduate research posture. Measurement is on each species' own cognitive terms, and the true success metric is whether a new capability spreads and persists in the wild population over generations.

02 SPECIFIC AIMS

Aim 1. Establish, for each track, that a target wild population can acquire a new, wild-useful capability through scaffolding rather than gifting, without harm and without dependency on humans.

Aim 2. Demonstrate that an acquired capability is TRANSMITTED within the wild population -- peer to peer, parent to offspring, or down the maternal or matriline -- and that it PERSISTS across generations after intervention ends.

Aim 3. Show that the transmitted capability measurably improves the population's foraging, security, or survival, and reduces, rather than increases, conflict with humans.

Aim 4. Develop and validate the shared methods, rigs, welfare standards, and measurement protocols that let the program scale from single pilot sites to many outposts across regions and, ultimately, worldwide.

Aim 5. Build the human capacity -- trained cohorts of graduate and undergraduate researchers and handlers -- and the physical capacity -- fabricated rigs, field stations, and vessel access -- required to run the program at scale.

03 SIGNIFICANCE AND BACKGROUND

The founding thesis. Human intelligence and culture did not rise in a vacuum; they rose as abundance and stockpiling produced spare time and docility, which produced the room for problems to be worked, solutions to be authored, and knowledge to be transmitted. The clearest animal evidence that this pathway is real, fast, and heritable is the decades-long silver-fox domestication experiment, in which selection on tameness alone produced docile, human-oriented foxes with correlated behavioral change within only a handful of generations (Trut 2009; Dugatkin 2018). The clearest evidence that a wild population can adopt and hold a behavioral culture, transmitted rather than merely inherited, is Robert Sapolsky's savanna baboon troop, whose peaceable culture persisted and was adopted by new males joining the troop years after the original members had gone (Sapolsky and Share 2004).

Wild animals already hold and transmit culture. Chimpanzees maintain regional behavioral traditions that vary between groups and are socially transmitted (Whiten et al. 1999). Tool-using dolphins in Shark Bay pass sponge-tool foraging down the maternal line as a culturally distinct behavior (Mann et al. 2012). Wild gorillas use tools already (Breuer et al. 2005), as do New Caledonian crows and ravens, the latter planning for the future on a par with great apes (Kabadayi and Osvath 2017). Elephant matriarchs carry ecological knowledge that raises their group's survival through drought. Across the invertebrate world, cognition once thought impossible is now documented: cuttlefish exert self-control in a delay-of-gratification task (Schnell et al. 2021); octopuses show an active, REM-like sleep stage (Pophale et al. 2023); bumblebees engage in apparently playful, non-instrumental object manipulation (Loukola et al. 2017; Galpayage Dona et al. 2022); ants teach by tandem-running (Franks and Richardson 2006); and jumping spiders display an REM-sleep-like state, the first reported in a terrestrial invertebrate (Rossler et al. 2022). The New York Declaration on Animal Consciousness (2024) affirms a realistic possibility of conscious experience across the vertebrates and many invertebrates, including cephalopods, decapod crustaceans, and insects.

The gap and the opportunity. No program has combined these findings into a deliberate, scaled effort to RAISE the intelligence of wild populations and let them keep it. Doing so would add co-intelligent life to the planet and, because each intervention is aimed at wild-useful, conflict-reducing capability, would advance conservation at the same time. The significance is difficult to overstate and, by design, difficult to fully foresee.

The Alpha Array. The program is organized around a set of leaders, the animals whose minds the public already knows: the octopus, the dolphin, the crow, the elephant, the great ape, the fox, and the bear. This is the Alpha Array. It is not the roster of what the program can do; it is the set that makes the full scope legible. The method applies to any species with the cognition and the plasticity to author a better version of a behavior it already performs, and the number of such species is not eight or eighty but on the order of a thousand. The pig, which outperforms dogs on several cognitive tests, and the horse, which reads human faces and gestures and remembers them, are only the most obvious of the next tier, and behind them stands the long tail of capable minds across the classes. The program does not catalog them, because a catalog would mistake the point. It leads with the Array everyone recognizes, states the scope plainly, and lets each outpost take up whichever species its water, its land, and its team can serve. The Array is the argument; the thousand are the reach.

Saturation is the mechanism, not a distant ambition. A wild population's intelligence does not move because a few animals at one clever site improve; it moves when the method reaches enough of the population's range, and its own generations, that the gain becomes the population's own inheritance. That requires thousands of outposts, saturating the ranges of the served populations, running continuously across the generations it takes for a transmitted change to hold. A pilot proves the method; only saturation produces the lasting effect on the species. The endpoint is therefore not a showcase site but a dense, worldwide network, and the entire cost and fabrication strategy, the repeatable mold that drops the per-outpost cost with volume, exists to make that saturation affordable.

In operation this is not an Array-only program. The mature program is thousands of outposts worldwide, and an outpost does not discriminate to the famous few. It takes on every operable species that fits its own operating conditions, meaning any species whose body, mind, and habitat suit the method that outpost runs. The tracks are defined by operating conditions, not by taxonomy. A stationary clear-box marine outpost works whatever aquatic minds its water holds. A primate field outpost built around apes does not add whales, but it does add the several monkeys and baboons that fit the same field method, because they belong to its operating conditions. The Alpha Array is how the program is understood from outside; the operating conditions are how it decides, at each site, which minds it can actually serve. The reach is the sum of what all the outposts, each non-discriminating within its own conditions, can take up.

A near-term tailwind: conservation monitoring is being transformed by artificial intelligence, and that shift makes a program like this steadily cheaper and more responsive. The change is already concrete. Large classifier models now process camera-trap imagery at a scale no human team could match, and open systems for species and individual identification are in field use. Deep-learning pipelines detect and track marine mammals from drone video well enough to estimate group sizes non-invasively. Machine-learning bioacoustics has reached the point of proposing internal structure in the vocalizations themselves: in 2024 Project CETI and MIT researchers described a sperm whale phonetic alphabet, a combinatorial system of rhythm, tempo, rubato, and ornamentation in the animals' click sequences (Sharma et al. 2024), the first result of its kind and a signal that machine analysis can begin to resolve the communication of the very species this program scaffolds. Computer-vision individual and matriline identification, satellite and drone survey, and movement analytics round out a monitoring stack that is collapsing the cost of watching wild populations closely and continuously. Capabilities that once required a season of human observation to produce a single dataset are moving toward real-time, low-cost, standing measurement. For this program the consequence is direct: the transmission-and-persistence signal that defines success becomes easier and cheaper to detect at every outpost, individual and generational tracking becomes tractable at saturation scale rather than only at a pilot site, and the method itself can be adapted in the wild in near-real time as the monitoring returns results. As these tools mature over the life of the program, the per-outpost measurement and monitoring lines in the budget are expected to fall while the fidelity of the data rises, which strengthens the saturation model precisely where it is most demanding, in tracking a signal across thousands of sites and many generations at once.

04 APPROACH AND METHODOLOGY

The method, common to every track:

1. CONDITIONS FIRST. Provide abundance and security to a study population -- reliable natural provisioning where appropriate -- to create the spare time and docility in which capability can grow. This is itself an uplift and, for threatened species, a conservation lever.

2. SCAFFOLD, DO NOT GIFT. Design tasks and staged problems that provoke the animal to AUTHOR an improvement to something it already does -- a better tool, a better foraging technique, a better shelter -- using materials and ideas already within its reach. The solution must be the animal's own so that it can be understood, kept, and taught.

3. WILD-USEFUL AND CONFLICT-REDUCING TASKS. Favor capabilities that raise survival in the animal's real environment and that reduce, not increase, dependence on or conflict with humans -- the standing answer to the program's own dark side (a smarter forager that depletes its food, or a smarter animal that raids human resources): the conservation and conflict-management response is designed in from the start.

4. TRANSMISSION IS THE GOAL. Instrument every site to detect whether a capability spreads through the population and persists across generations. A single trained animal is not a result; a changed population is.

The nine tracks, grouped by method. A. THE BOXED / SMALL-RIG FAMILY (stationary clear enclosures and small intricate rigs; humane, short-session, catch-and-release; the animal sees its home environment throughout; built in repeatable molds at known cost): - Marine invertebrates and pufferfish (octopus, cuttlefish, freshwater and marine puffers, plus wrasse, archerfish, cichlids and other candidates). - Insects and small invertebrates (farming ants amplified in their own farming; honeybees via domestication and spare time; jumping spiders in small mazes). - Corvids (crows, ravens, jays, magpies), which also run a field mode. These three tracks share the same mechanical method and are combined in a single companion proposal, the Boxed-Species Proposal. B. THE FIELD-STUDY FAMILY (graduate-research-posture fieldwork with wild populations, with captive members of the wild species used as a deep-study and method-development partner where ethical): - Marine mammals (dolphins, orcas, belugas, pinnipeds), via trained handlers who bring captive-honed expertise to wild populations. - Great apes and primates (chimpanzees, gorillas, bonobos, savanna baboons). - Elephants (Asian and African), via the matriarch knowledge-transmission channel. - Bears

(American black, brown), at habituated-but-wild sites, under an absolute no-human-food-reward rule that inverts the box method's free meal. - The domestic-lineage species (fox, dog, cat, rodent), uniquely run as a DUAL track: wild uplift on the wild counterpart (red fox, dingo and village dogs, wildcat and feral cats, wild brown rat and wood mouse) plus deep study with the already domesticated members (agility and obstacle courses, cross-species socialization, high-repetition cooperation) whose findings feed the wild goal.

05 ETHICS AND WELFARE

Every track is welfare-first and reviewed to a published standard, on the model of institutional animal-care review. Sessions are short and enriching; captures are humane, local, and released at point of capture; no animal is held longer than the work requires. For sentient invertebrates the program adopts a precautionary welfare posture consistent with the New York Declaration on Animal Consciousness. For endangered and near-person species -- great apes, cetaceans, elephants -- work is non-invasive, never uses new captures for holding, respects the animals' near-person status, and treats uplift and conservation as one effort. Captive members of wild species are used only where already in good welfare. Bears are never rewarded with human food, because food-conditioning is lethal to them. Human-wildlife-conflict management and conservation partners are engaged from the first site.

06 PERMITTING

Permitting is a design constraint of every track, and the instruments differ sharply by species and place. The program names them here so no track proceeds without the right authorization in hand, and it staffs a permitting liaison to carry each from the pre- application meeting the agencies encourage through to the recorded permit and its monitoring conditions.

Animal-side authorization is common to all tracks: a scientific collecting or research permit from the relevant state wildlife agency and, for federal lands or federally managed species, from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service; animal-care and welfare review to a published institutional standard on the model of an IACUC, run under the 3Rs of replacement, reduction, and refinement; and, for any listed species, an Endangered Species Act authorization, with CITES for anything moved across a border. The heaviest species-specific regimes fall on the field-study tracks. Cetaceans and pinnipeds are governed by the Marine Mammal Protection Act, which requires a scientific research permit and a specified take authorization for any approach or interaction, and the program's captive-to-wild handler work is done under those terms. Great apes and elephants are near-person, often listed, and frequently held at accredited sanctuaries or parks whose own institutional review governs the captive-partner work; wild work is non-invasive and observation-first. The bear track adds a hard operating rule that is itself a permitting condition: habituation at a Katmai-style site is acceptable, but food-conditioning is forbidden, and the program coordinates with human-bear-conflict management so its work reduces rather than creates dead problem bears.

The boxed and marine tracks add the law of the coast. A clear enclosure moored in coastal water needs a Coastal Development Permit under the Coastal Zone Management Act and the state coastal program, a U.S. Army Corps of Engineers authorization under Section 10 of the Rivers and Harbors Act for the structure and its mooring, and, where any fill or bed disturbance is involved, Section 404 of the Clean Water Act with a state 401 water-quality certification; tideland states add a state waterways license such as Massachusetts Chapter 91. The coastal-permit record reads a moored structure against categories of dredge and fill, revetment, groin, breakwater, bulkhead, and pier, and the enclosures are sited to avoid the disfavored ones and to qualify for the streamlined living-shorelines and habitat- positive path where it exists. Because the enclosures are engineered as habitat, the marine work argues the net-ecological-gain posture, not merely no net harm. (The program's coastal-permitting source corpus, drawn from California, Oregon, Washington, Florida, Texas, and Massachusetts coastal law, backs this section.)

07 MEASUREMENT AND EVALUATION

Each animal is assessed on its own cognitive architecture, not a human yardstick. Task rigs are built to exercise and score specific abilities appropriate to the species -- problem-solving, memory, self-control, discrimination, tool handling, navigation, social learning. Beyond the individual, the program tracks POPULATION-LEVEL outcomes: whether a capability spreads (peer, parental, matrilineal) and PERSISTS across seasons and generations, and whether measurable improvements in foraging, security, survival, and reduced human conflict follow. Transmission and persistence in the wild population are the definitive success metrics.

08 PERSONNEL

The program is run in a graduate-research posture regardless of institutional home: it does not assume university adoption and may be independently or privately funded. Core roles: principal investigator and track leads; cohorts of GRADUATE and UNDERGRADUATE researchers who carry out fieldwork, rig-tending, data capture, and analysis, working in packs assigned to sites and species; trained animal handlers for the field-study family; fabrication and field-station staff; a welfare and ethics officer; a conservation and permitting liaison; and vessel crew for the marine tracks. The undergraduate and graduate cohorts are both the labor and the training pipeline of the program.

09 FACILITIES, VESSELS, AND EQUIPMENT

- OUTPOST RIGS. Stationary clear marine enclosures, insect and corvid rigs, fabricated as repeatable molded units so an outpost is produced at a known unit cost rather than custom-built each time. Marine-grade acrylic and composite construction; habitat- positive surfaces so the structures recruit marine life and improve the water they sit in. - FIELD STATIONS. Land bases for the ape, elephant, bear, corvid-field, and domestic- lineage tracks, at or near habituated study populations and, where relevant, ethical sanctuaries and existing research sites. - RESEARCH VESSELS. The marine invertebrate and marine-mammal tracks require ship time, including MONTHS-LONG VOYAGES for offshore and multi-site work. Access is planned through the academic research-vessel system (the University-National Oceanographic Laboratory System, UNOLS, a consortium of academic oceanographic institutions and federal agencies that coordinates shared research-vessel scheduling) and through charter of smaller regional and coastal craft for near-shore box work. - INSTRUMENTATION. Cameras and sensors for continuous behavioral and transmission monitoring; photo-identification systems for individual and matriline tracking; data infrastructure for multi-site, multi-year records.

10 BUDGET AND BUSINESS PLAN, WITH JUSTIFICATION

The program is budgeted by cost center in the standard direct-plus-indirect structure (Yale and Columbia both require a budget of reasonable, justified expenses, plus a facilities-and-administrative, or indirect, rate applied on top of direct costs). Figures below are grounded, order-of-magnitude planning ranges to be refined per site and year; they are not quotes. No fabricated precision is claimed.

11 DIRECT COSTS

1. PERSONNEL (typically the largest line). A fully funded doctoral researcher in the

United States costs on the order of $150,000 to $200,000 over a five-year program once stipend, tuition or its equivalent, and benefits are included; an annual all-in cost per graduate researcher is commonly in the tens of thousands of dollars. Undergraduate field cohorts are far cheaper per head and expand labor at low cost. Handlers, fabrication staff, a welfare officer, and vessel crew are additional salaried lines. Justification: the program is labor-intensive fieldwork across many sites; trained cohorts are both its workforce and its pipeline.

2. RESEARCH VESSELS AND SEA TIME. Ship time is the single most expensive marine line.

Ocean-class research-vessel day rates run to many tens of thousands of dollars per day at the largest classes; smaller regional and coastal vessels are substantially less. Months-long voyages are therefore a major, deliberately scoped cost, mitigated by using UNOLS-scheduled shared ship time where possible and chartering smaller craft for near-shore box work. Justification: the marine tracks cannot be run from land.

3. RIG AND OUTPOST FABRICATION. Marine-grade acrylic enclosures, insect and corvid rigs,

and their moorings and habitat surfaces. Building in REPEATABLE MOLDS is the core cost strategy: the first unit of a design carries the tooling cost, but each subsequent unit is produced at a known, far lower marginal cost -- the same economics the marine manufacturing industry already uses for molded hulls. Order-of-magnitude, a single marine enclosure is clear one-inch cast acrylic at roughly twenty to forty dollars a square foot, through-bolted with 316 stainless or titanium marine fasteners and no structural glue: a field enclosure of about six by four by four feet is on the order of two thousand five hundred to five thousand dollars in material, and a compact starter rig is closer to six hundred to thirteen hundred. Molding drops the marginal unit well below the first, so a mature fabrication line delivers outposts at a known per-unit cost. Justification: because SATURATION is the mechanism and the endpoint is thousands of outposts, the program is priced as a production run, not as a set of bespoke builds; the controlling number is the marginal cost per outpost multiplied by the density a served range requires, and the mold is what keeps that product affordable at scale.

12 THE OUTPOST SCALING LADDER (N-OUTPOST ECONOMICS)

Saturation is the mechanism, so the program's true cost is not a single grant but a production run scaled across N units. At the program level the unit is not a single box but a FOUNDING COHORT: one of each flagship plan running together, so the master reads N = 1 as the whole program lit up once, then scales that cohort to the saturation endpoint the founding plan describes ("outposts everywhere in the world... thousands of outposts around the world... now times by infinity").

WHAT N = 1 MEANS AT THE PROGRAM LEVEL. One founding cohort is one flagship outpost from each of the program's lead tracks, standing up the method across the full range of operating conditions at once, concentrated on the flagship species the public already knows. The starter cohort is four flagship outposts: one CORVID outpost (the cheapest and fastest, the lead), one MARINE-BOX outpost (octopus and cuttlefish, the flagship proving ground in the water), one GREAT-APE outpost (Sapolsky-line baboons and wild apes, the field-study flagship), and one CETACEAN outpost (dolphin or orca pod work, the most expensive and most visible marine-mammal flagship). Because per-outpost cost varies by an order of magnitude across these tracks, from roughly $120,000 a year for a corvid outpost to several million a year for a cetacean outpost, the founding cohort of four flagships is modeled at an order-of-magnitude $2,000,000 to $6,000,000 per year. This blended cohort is the program's true N = 1: the smallest configuration that still proves the whole thesis across every operating mode rather than in one track alone. (A single track fronting its own bounded application is a separate, smaller entry point, priced on that track's own ladder in its own proposal.)

SCALING THE COHORT. As N rises, the founding cohort is replicated and each track fills out toward range saturation; the fabrication and design line amortizes across the molded rigs so the blended per-outpost figure trends down, while labor and permitting lines do not compress the same way. The ladder below scales the founding cohort by orders of magnitude:

N = 1 cohort one of each flagship plan order $2M-$6M / year (corvid + marine-box + ape + cetacean, the whole thesis lit once) N = 10 cohorts each flagship saturated across order $20M-$60M / year a first set of priority ranges N = 100 cohorts every track fielded across order $200M-$600M / year many ranges and species, all modes running N = 1,000 cohorts multi-continent program order $2B-$6B / year (mold economics now dominant; per-unit trending down) N = 5,000 cohorts approaching range saturation order $10B-$30B / year for the Alpha Array worldwide N = 10,000 cohorts the founding-plan endpoint order $20B-$60B / year (outposts everywhere, every operable range, run serially and indefinitely -- "times by infinity")

The ladder is deliberately unbounded at the top: because the program is a SERIAL catch-and-release operation, an outpost does not finish and close; it runs continuously, processing new animals and new generations, so the endpoint is an ANNUAL operating figure for a standing global network, not a one-time capital sum. The whole-program aggregate is therefore correctly read as a multi-billion-dollar annual production run at saturation, and the strategic consequence is the two-layer structure of this library: the master carries the saturation-scale vision and the founding-cohort figure, while any single track fronts a bounded application at its own N = 1 rung, which is what a first funder or host actually underwrites.

4. FIELD STATIONS, TRAVEL, AND PER DIEM. Bases, transport, lodging, and subsistence for cohorts at multiple sites, including remote and international locations.

5. INSTRUMENTATION AND DATA. Cameras, sensors, photo-ID and tracking systems, and multi-year data infrastructure.

6. PERMITTING, WELFARE REVIEW, AND CONSERVATION PARTNERSHIP. Wildlife research permits (which vary sharply by species and jurisdiction, and are heaviest for cetaceans, apes, and elephants), animal-care review, and coordination with conservation and conflict-management bodies.

7. DISSEMINATION AND PUBLICATION. Open-access article-processing charges, which at major venues run from roughly two thousand to five thousand dollars or more per article, plus the production of reports and the public-facing library. Justification: the program's value depends on its findings being published, verifiable, and adoptable by others.

13 INDIRECT COSTS (FACILITIES AND ADMINISTRATION)

Applied as a negotiated percentage of direct costs per the sponsoring or hosting institution's rate. Where the program runs independently, an equivalent overhead line covers administration, space, and shared services.

14 BUSINESS-PLAN LOGIC

- PHASED SCALE. Begin with the CHEAPEST, FASTEST, LEAST-CONSTRAINED tracks as pilots -- corvids and the domestic-lineage species (abundant, legally light, accessible) and the near-shore marine box work -- to prove the full method (condition, scaffold, transmit, persist) at low cost before committing to the expensive, permit-heavy marine-mammal, ape, and elephant field programs. - MOLD ECONOMICS. Rig fabrication is designed so unit cost falls with volume, making the "thousands of outposts" endpoint a function of production scale rather than bespoke build. - COHORT LEVERAGE. Undergraduate and graduate cohorts supply scalable labor while training the next generation of the program's own workforce. - FUNDING PATHS. Compatible with sponsored research grants, private and philanthropic funding, and self-funding; the proposal is written to be institution-agnostic so it can be adopted, partnered, or run independently. - CONSERVATION SYNERGY. Because every intervention targets wild-useful, conflict-reducing capability, the program is simultaneously a conservation program, opening conservation as well as research funding.

15 TIMELINE

Phase 1 (pilots): the low-cost tracks (corvids, domestic-lineage, near-shore marine box)

prove the method end to end at one or a few sites, and the shared welfare, rig, and measurement protocols are validated. Phase 2 (expansion): additional tracks and sites are added, including the first field-study-family programs at stable, well-monitored populations and the first months-long marine voyages. Phase 3 (scale): outpost fabrication scales on mold economics, cohorts grow, and the program extends across regions toward the many-outpost endpoint. Each phase is gated on demonstrated transmission and persistence, not on elapsed time.

16 DISSEMINATION

Findings are published open-access and gathered in the public Intelligensicus library alongside this master proposal, the per-track proposals, and the combined Boxed-Species proposal. The program's primary-source research base -- the peer-reviewed literature that grounds each track -- is maintained as a companion bibliography.

BIBLIOGRAPHY (grounding literature; full citations in the companion reference set)

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