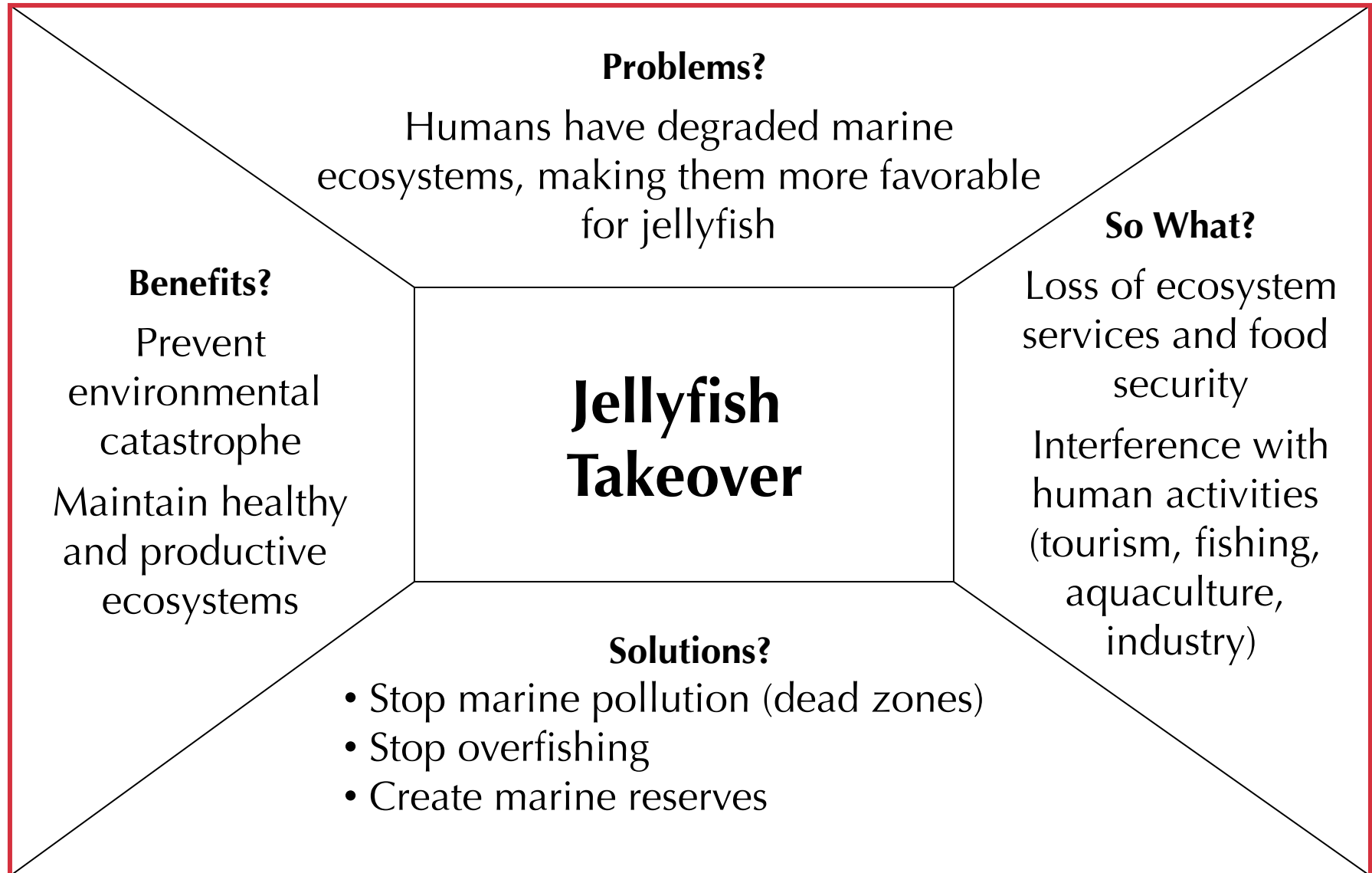


Audience: General Public



Audience: General public

Problems?

- How can we preserve the diversity of species given that only small amounts of habitat remain in most of the world?
- Conserving biodiversity is a major goal of conservation efforts (diversity is culturally valued, economically important, and may create more efficient ecosystems).
 - 10 – 30 million plant and animal species on the planet
 - Up to 50,000 species disappear each year (extinction rate is 1000-1000 times it naturally should be) from human activities (habitat destruction, over-harvesting, invasive species, pollution, climate change)
 - 1 in 8 plant species in world (1 in 3 in U.S.) is under threat of extinction
- What happens if we connect remaining habitats with strips of habitat, or, "corridors"?

Benefits?

- This is a good news story for conservation amidst the many stories of destruction and extinction
- Corridors are a practical conservation tool for preserving biodiversity in already fragmented landscapes
- Corridors will provide the greatest benefit to the species we are most interested in conserving
- Corridors provide additional habitat, but our study shows that they also provide functionality that goes beyond that
- Land is changed everyday, but rarely allows us to learn something from the changes. This is what our experiment has done
- These results, and others, have now shown that corridors DO work. We now need to know WHEN they work
 - Future studies will ask if we can use the traits plants, for example how plants are pollinated and dispersed, to predict how they will respond to corridors
 - We also want to link our experimental studies with on-the-ground conservation efforts that are using corridors

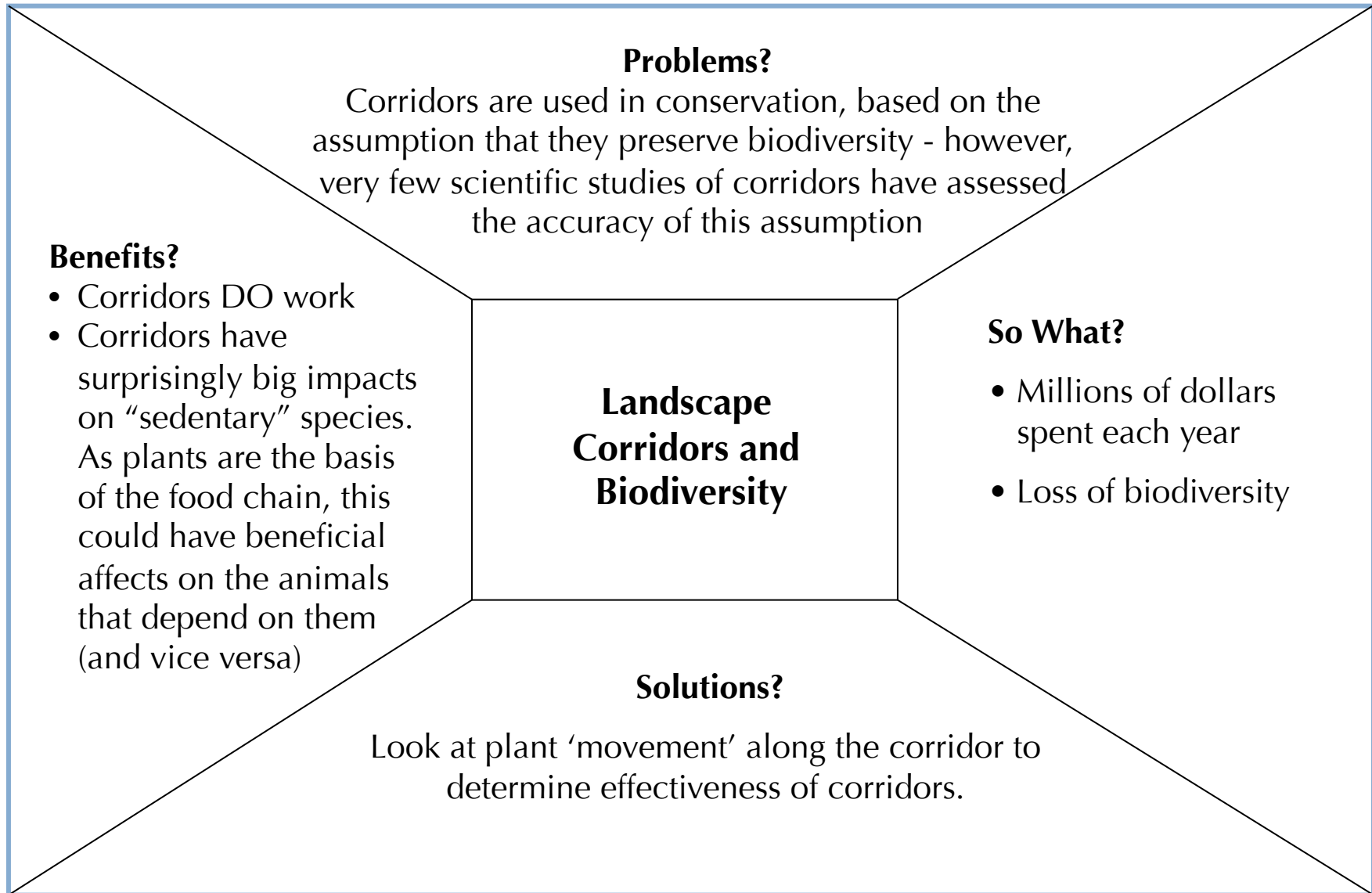
Landscape Corridors and Biodiversity

Solutions?

- After 5 years, 20% more plant species in habitats connected by a corridor
 - ~90-110 species per patch, ~ 55 native longleaf pine savanna species
 - Gap arose because patches without a corridor lost ~20 species (~10 native to LLP)
- Our experimental design allowed us to link the beneficial effects of corridors on plant diversity specifically to the connectivity that they provide (reject habitat area, patch shape, history (seedbank), local environmental differences)
- Corridors enable plants and animals to survive by not isolating them. Could do so in 3 ways:
 - Corridors increase the number of seeds that arrive in a patch for some species
 - Corridors increase rates of insect pollination and therefore higher quality seeds
 - Corridors affect the behavior of seed-eating animals, so that they may consume the seeds of more common species and give the seeds of rare native plants an advantage
- Corridors had disproportionately beneficial effect on natives vs. exotics
 - Exotic species already everywhere and did not rely on corridors to spread, or remained in one place
 - Only ~3 exotic or invasive plant species in each patch, no effect of corridors

So What?

- Corridors are often used in conservation based on the assumption that they preserve biodiversity (millions of dollars spent each year)
- Very few scientific studies of corridors have assessed the accuracy of this assumption - logistically and ethically difficult
- Our study is the first large-scale controlled study in a real landscape to ask how corridors affect species diversity at large scales
 - Landscape: ~24 football fields, ~12 city blocks, ~50 ha, ~124 acres
 - Patch: ~2 football fields, ~1 city block, 1 ha, ~3.28 acres
 - Corridor: 150 x 25m (492 x 82 ft.) (A football field = 109.1 x 48.5m = 0.52ha)
- One of first to look at effects of corridors on plants
 - Have surprisingly big impacts on these "sedentary" species.
 - Plants basis of food chain and could affect the animals that depend on them
 - In fact, goes both ways – plants affected by animals that move their seeds and pollen or eat their leaves and seeds



Audience: Media