

# **Biodiversity Impact Mitigation: Offsets**



# Basic Idea





# Basic Idea...(1)

- Offsets are a voluntary direct provision of a public good.
  - (Kotchen 2009).
- Provision may occur, in part, to offset other activities that have an adverse effect on a public good.



# Basic Idea...(2)

- Proposed for marine environment
- Bellagio (2004), Wilcox and Donlan (2007), Dutton and Squires (2008), Janisse et al. (2010), Pascoe et al. (2011), Dutton et al. (2011), Squires et al. (2014), Bull et al. (in prep. 2014)



# Compensatory Offsets





# Compensatory Offsets As Last Resort and Residual Impacts

- Last resort, addressing residual impacts, after done best to reduce bycatch
- Risk to government if bycatch laws and regulations



# Compensatory Offsets

- Compensatory offsets are at bottom of mitigation hierarchy.
- Conservation gains from compensatory offsets should be additional,
  - Would not have occurred without the offsets.
  - Additionality
- Substitute for additional measures to address residual impacts that could otherwise be technically impossible or economically non-viable to address

# Key & Highly Charged Question

- Should compensatory offsets be directly tied to larger bycatch allowance?

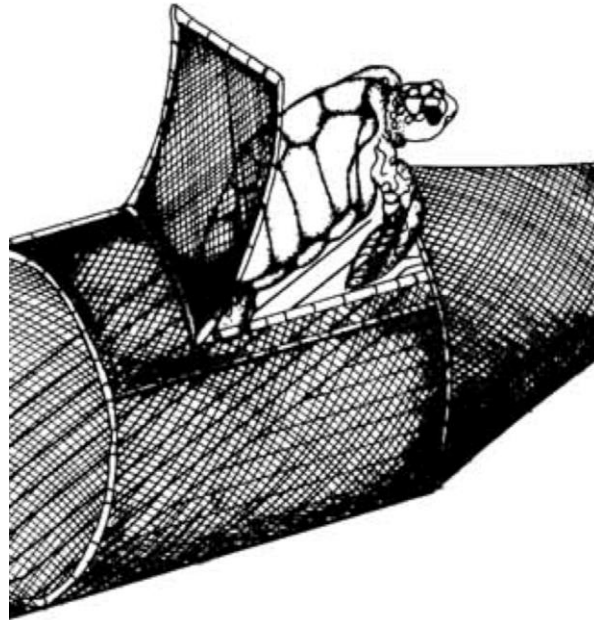


# Conservatory Offsets



# Voluntary, Conservatory...(1)

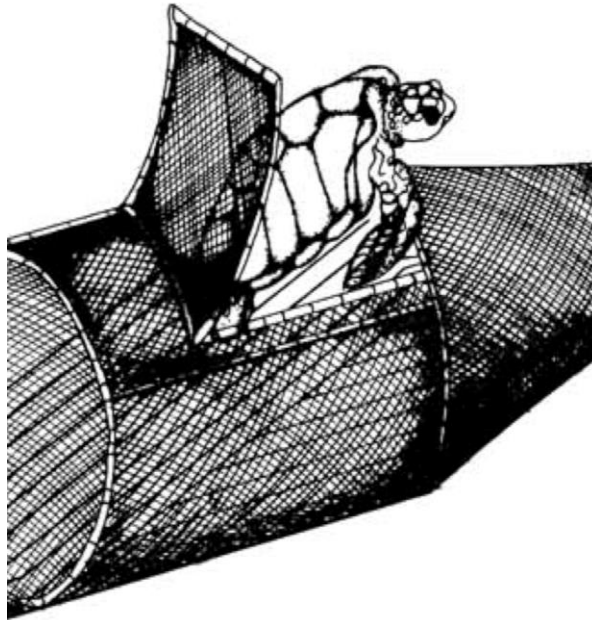
- Conservation complementary to other biodiversity conservation policies
- (ten Kate 2004, Pascoe et al. 2011, BBOP 2013, ten Kate and Pilgrim 2014, Squires et al. 2014).





# Voluntary, Conservatory...(2)

- Not last resort.
- Instead, least-cost complementary tool that is part of mitigation hierarchy before last resort, residual.





# Least-Cost Benefits

- Can be a net gain in conservation if any saved funds from least-cost conservation can in turn be used in another activity or location for conservation or to extend current conservation efforts,
  - If not otherwise conducted (additionality).

# Part of Overall Conservation Strategy

- Not necessarily associated with a legal mandate and/or conservation hard caps or even necessarily rough targets.
- May instead form part of an overall conservation strategy
  - Least-cost
  - May be incentivized by consumer market preferences, general regulatory goals, or ecosystem management.

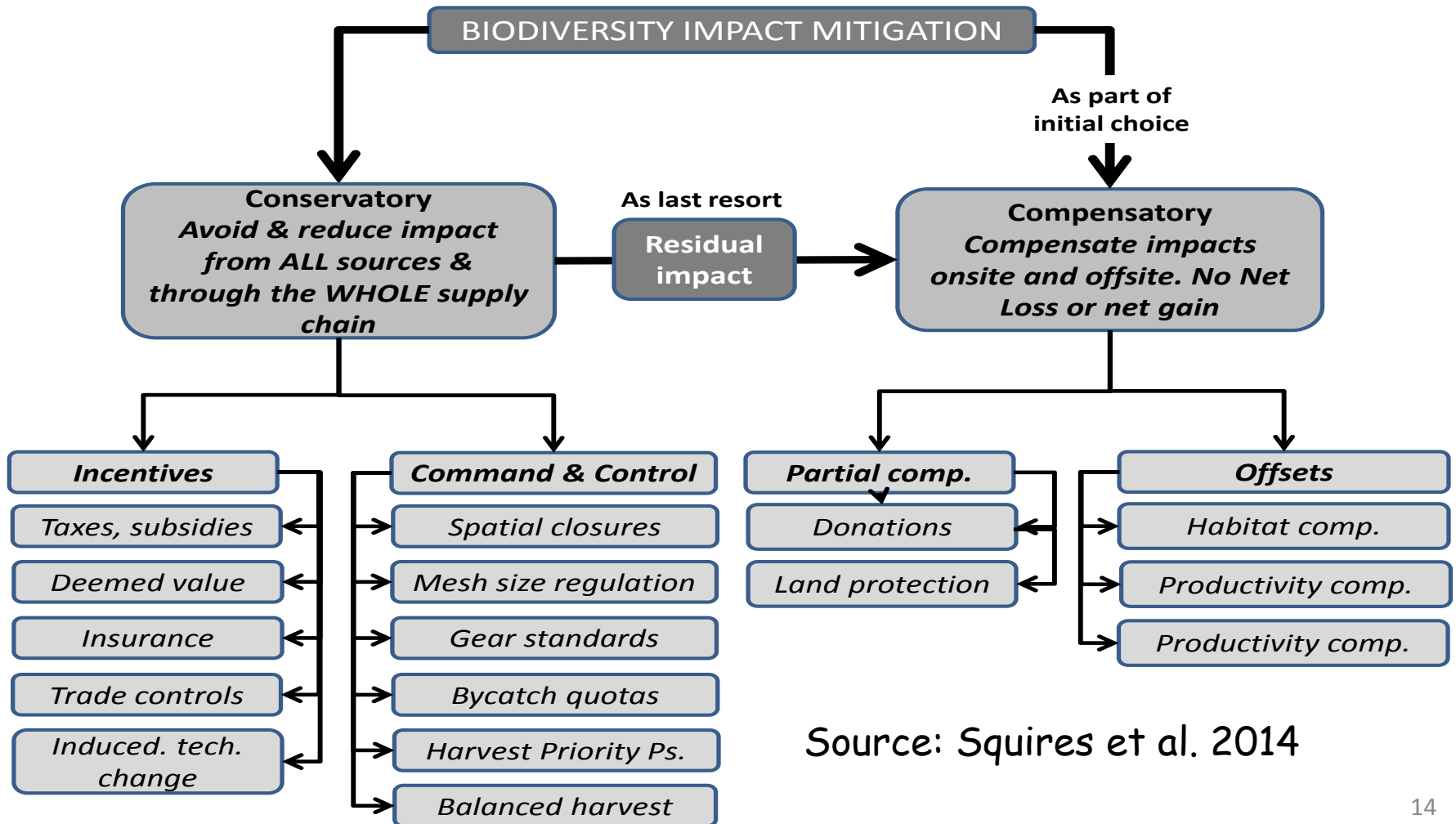
# Risk to Management Authority

- Partial compensation does not impose risk upon the management authority
- In contrast to offsets arising from legal ramifications of failing to achieve no net loss.

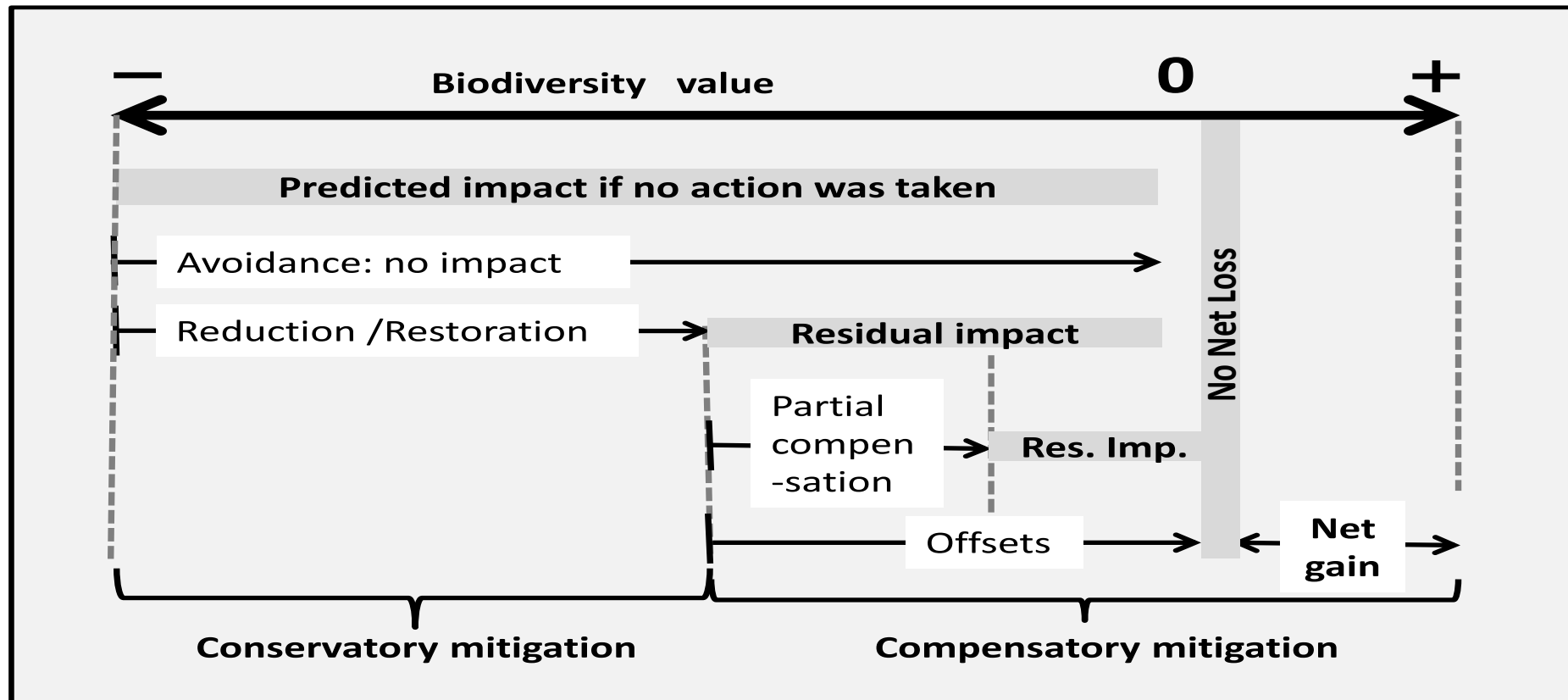




# Biodiversity Impact Mitigation Hierarchy Including Conservatory & Compensatory Instruments.



# Mitigation Hierarchy and Relation between Conservatory & Compensatory Mitigation & Offsets.



Modified from BBOP (2013)

Source: Squires et al. 2014

# Voluntary, Conservatory Offset Examples

- International Seafood Sustainability Foundation
  - Sea turtle nesting site and artisanal fishery contributions around the globe
  - Financed by voluntary levy of \$1/ton longline-caught fish by Bumble Bee, StarKist, and Chicken of the Sea
- California Drift Gillnet Fleet: Pete Dupoy (Janisse et al. 2010)
  - Sea turtle nesting sites in Baja California



# Some Design Issues



# 1. No Net Loss

- Concept of 'biodiversity' does not engender a single metric that can capture ecological variability in its entirety.
- Any measure used is thus a proxy for total biodiversity.
- Workshop settled on no net loss of reproductively competent females.

## 2. Managing Uncertainty

- To manage risk, compensation program must be designed in which the expected outcome is much greater to protect against risk at the low end of the tail, i.e. the plausible low outcome is protected.
- Two commonly used ways address this in terrestrial systems:
  - biodiversity banking
  - multipliers

# 3. Longevity

- How long should compensation projects endure?
- Ecological components problem of defining required longevity.
- Also design of financial and legal instruments that ensure compensation projects last.



## 4. Equivalence...(1)

- Traditionally, gains and losses should be as similar as possible, in terms of:
  - biodiversity component (e.g. faunal species, habitat classification),
  - proximity in space, etc.
- Such compensation projects are termed 'in-kind' or 'like for like'.

## 4. Equivalence...(2)

- 'Out of kind' compensation schemes might deliver more efficient use of conservation funding or higher conservation value.
- 'Out of kind' biodiversity trades are acceptable as long as the gains are in a biodiversity component of higher conservation value than the losses.
- Examples: Sea turtle nesting site and sea bird rookery protection.

# 5. Thresholds

- Criteria for deciding whether a biodiversity component can be considered eligible for offsets.
- Relates to residual losses, rather than gains.
- Criteria are often framed around concepts of: (1) Irreplaceability: offset opportunities available for a biodiversity component and
- (2) Vulnerability: it's current conservation status.

# 6. Restorability

- Degree to which restoration of habitats or species' populations is possible.
- Given that concept of no net loss assumes ability to deliver additional biodiversity gains somewhere in an ecosystem, question of 'restorability' is key.



Thanks!

Questions?

