

焦点集約下での森林資源管理

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焦点集約

小規模老齢林の孤立→周辺域との集約



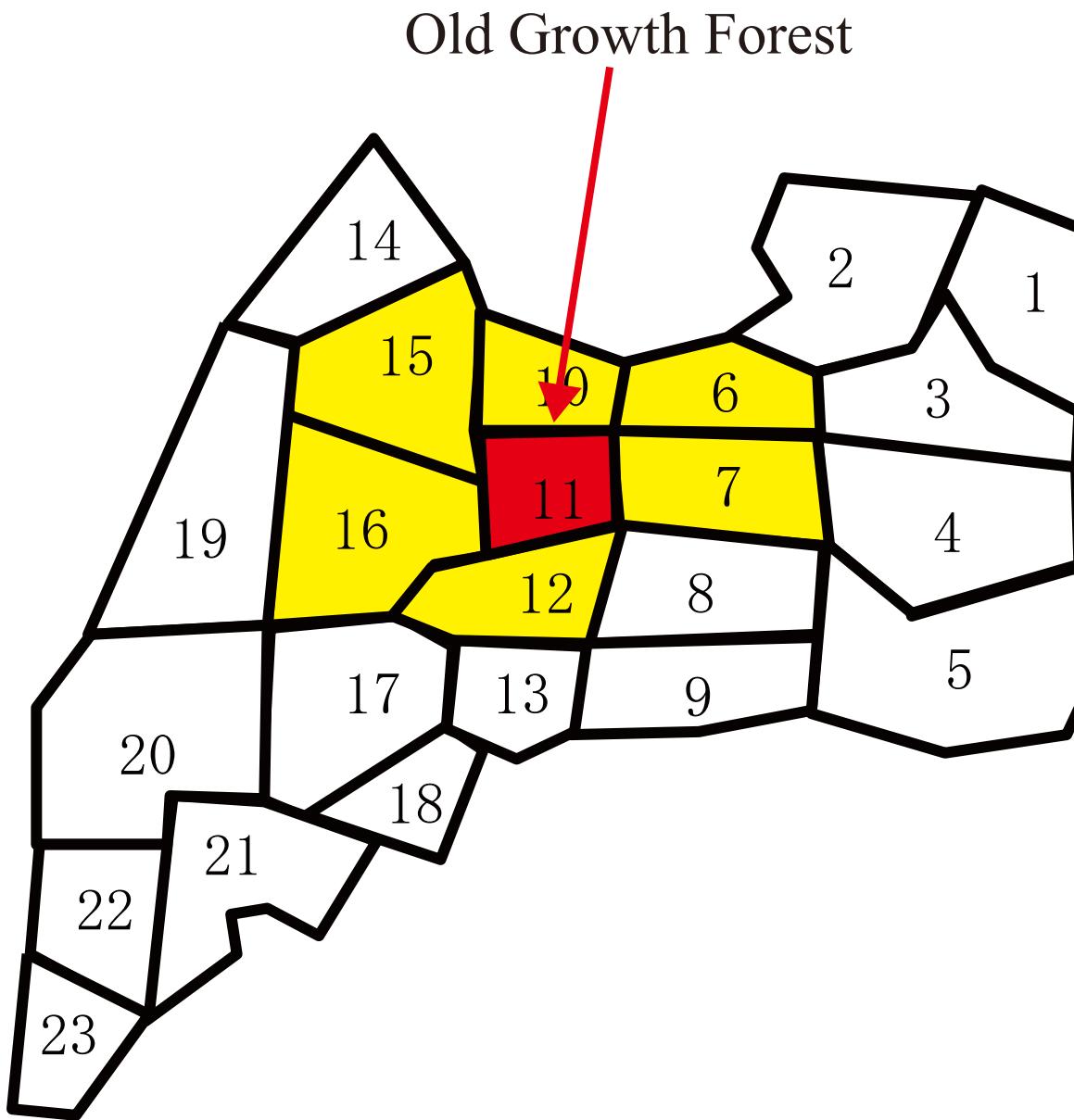
- Biological Conservation –

- *Focal-Point Aggregation*

- Old growth preservation

- Minimal patch size for the wildlife habitat

Aggregation for Old Growth Forest



焦点集約による保護区形成

- 焦点からスパーカードへの直結
- 保護区最小サイズの制約

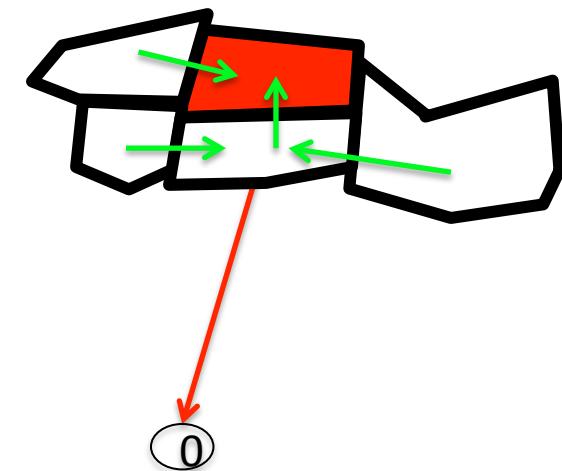
$$y_{i0} = 1, \forall i \in S^f$$

$$w_{i0} \geq L_{\min}^f, \forall i \in S^f$$

$$x_{i0} = 1, \forall i \in S^f$$

S^f : an index set of focal points

L_{\min}^f : minimum preservation size



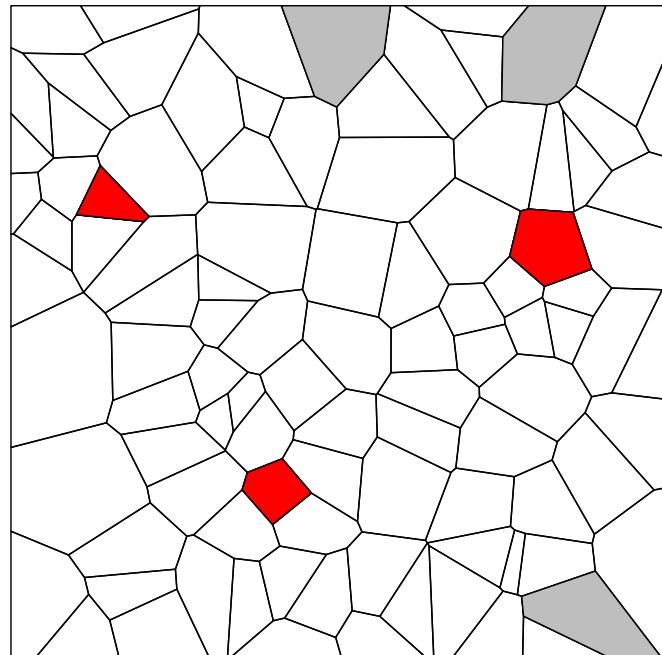
老齢林ゾーンの保護

$y_{i0} = 1, \forall i \in S^f, S^f: \text{a set of focal points}$

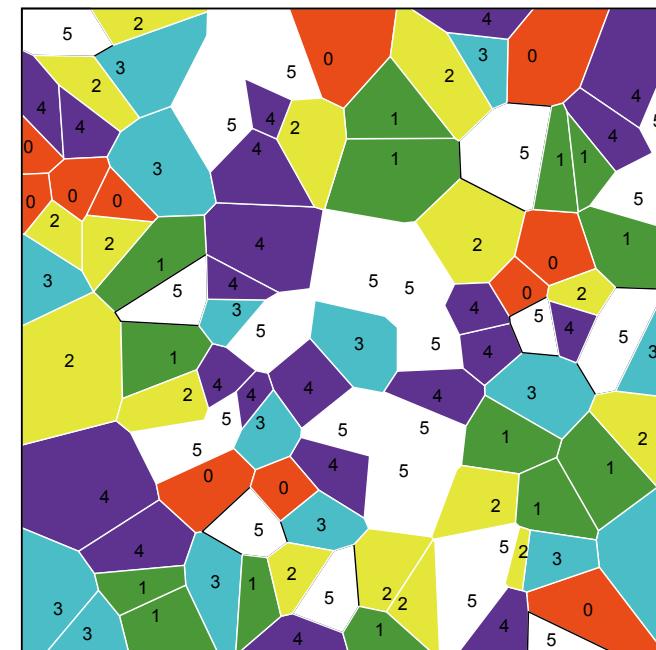
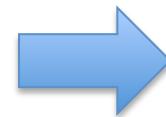
$w_{i0} \geq L_{\min}^f, \forall i \in S^f, L_{\min}^f: \text{minimum size}$

$x_{i0} = 1, \forall i \in S^f$

25 clusters



Preserving old growth>15ha

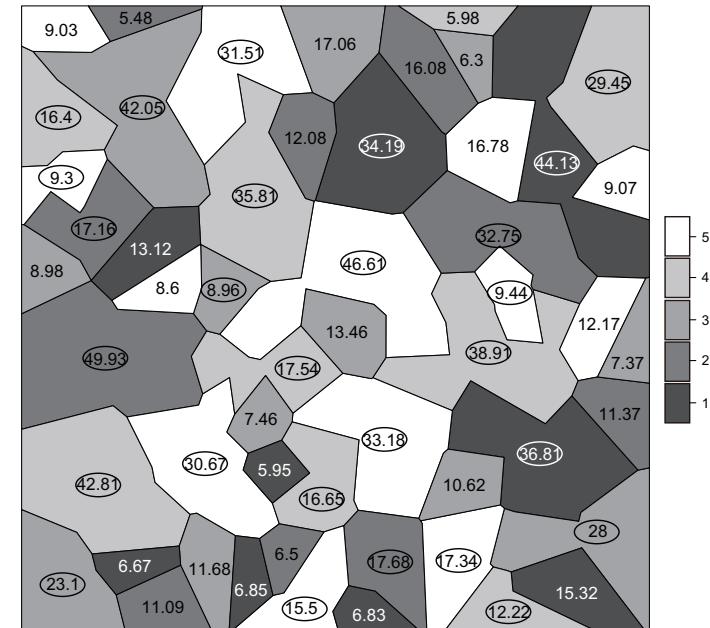
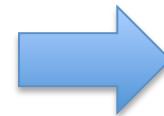
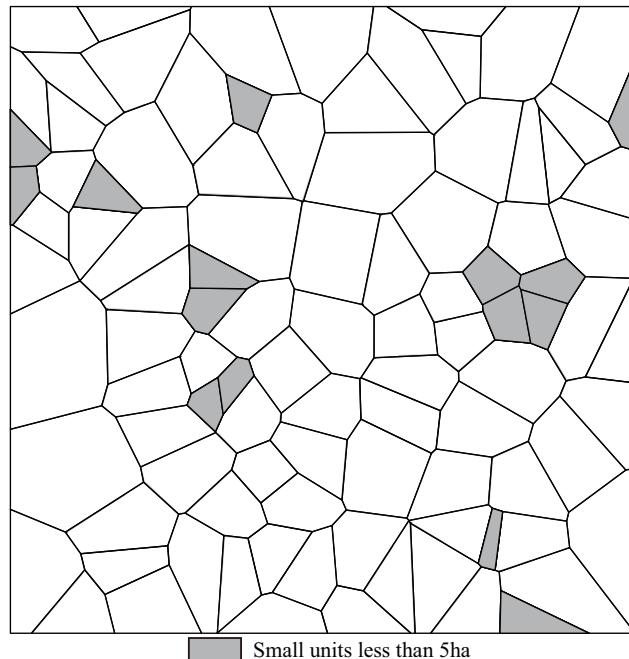


Less than 50ha & aggregation of old growth

焦点集約

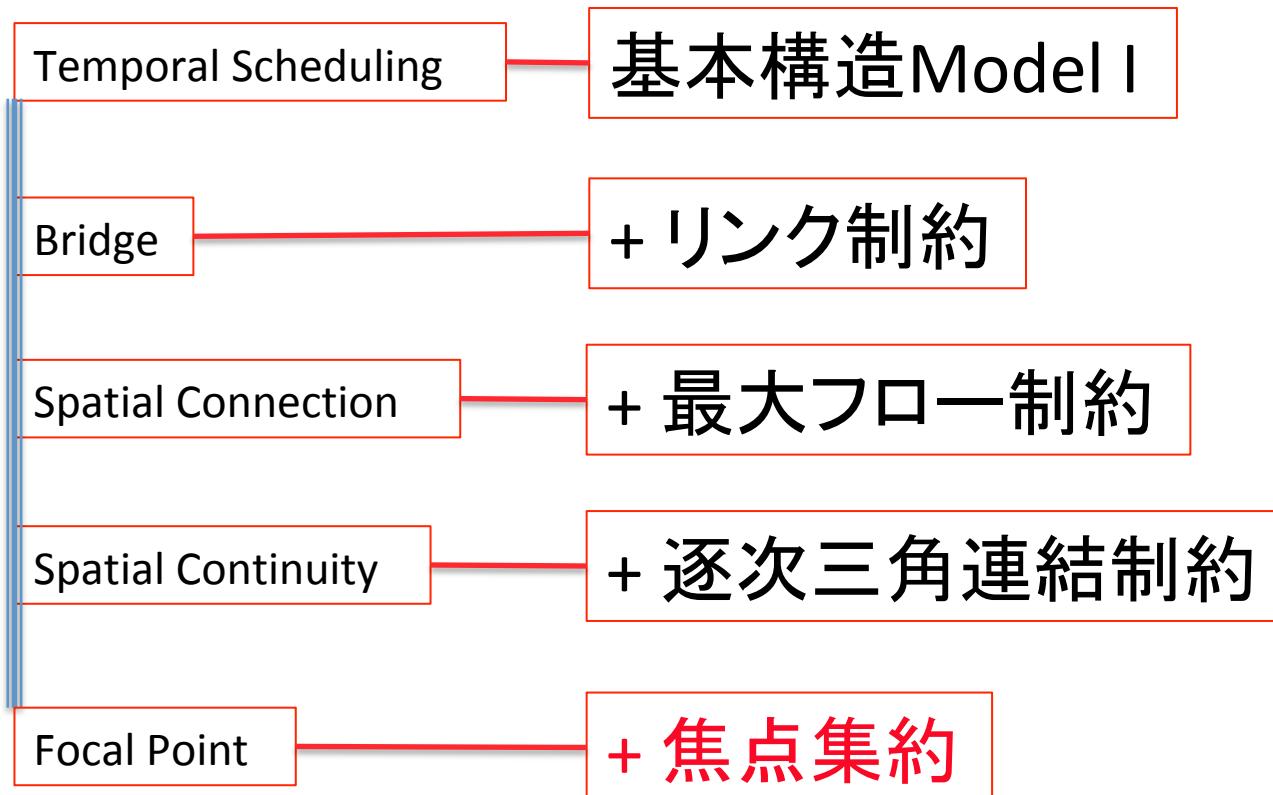
集約条件下での小規模林分の回避

$$y_{i0} = 0, \forall i \in S^f, S^f: \text{a set of focal points}$$



MF-Model I

複雑な問題構造に対するモジュール的なアプローチ

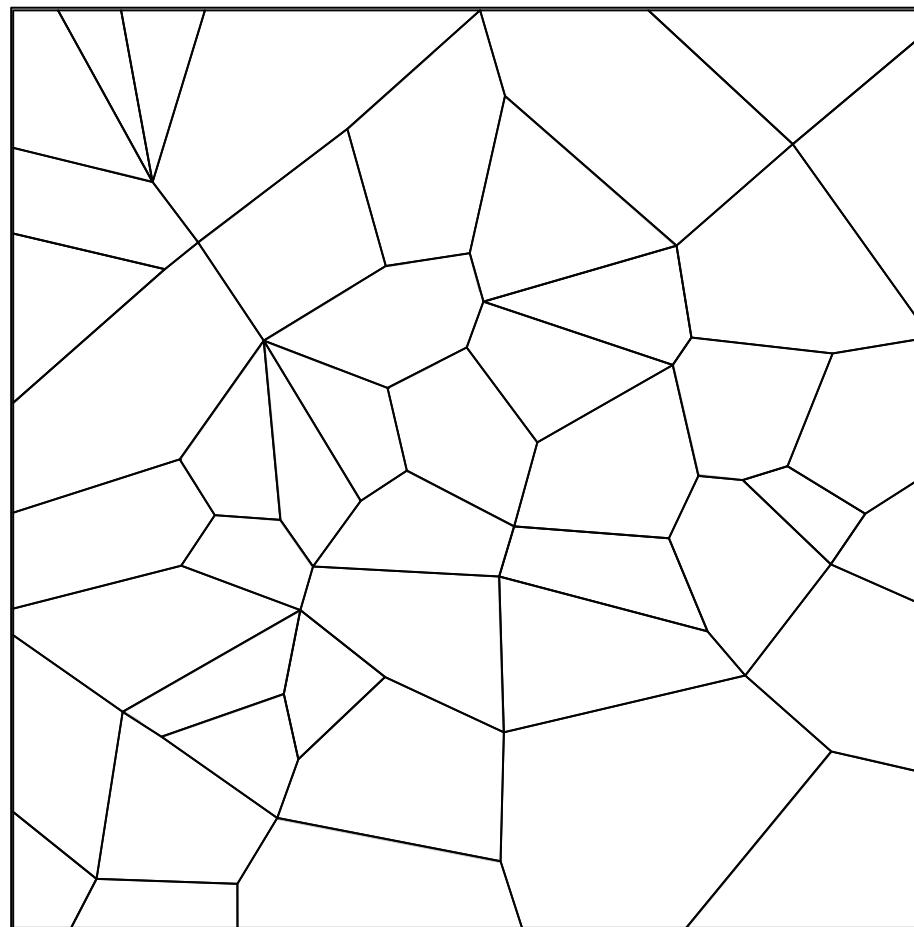


Focal-Point Aggregation

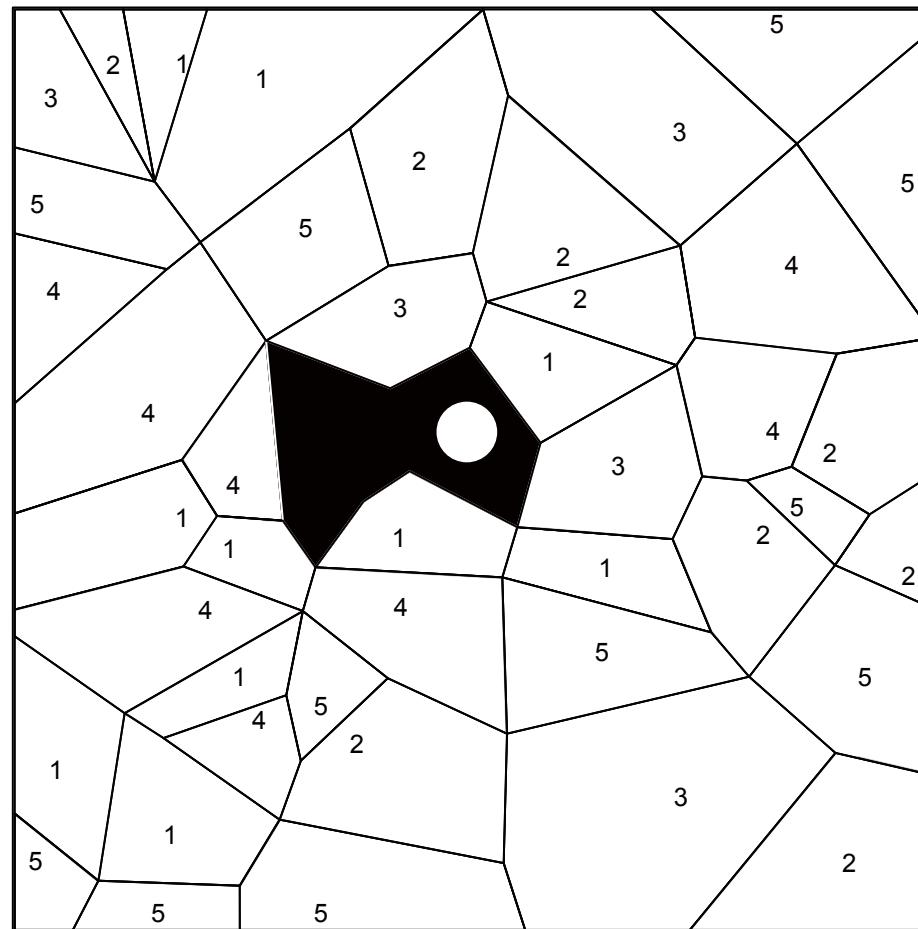
Creating patches
for old growth for preservation

$$y_{i0} = 1, \forall i \in S^f, \quad S^f: \text{a set of focal points}$$
$$w_{i0} \geq L_{\min}^f, \quad \forall i \in S^f, \quad L_{\min}^f: \text{minimum size}$$
$$x_{i0} = 1, \forall i \in S^f$$

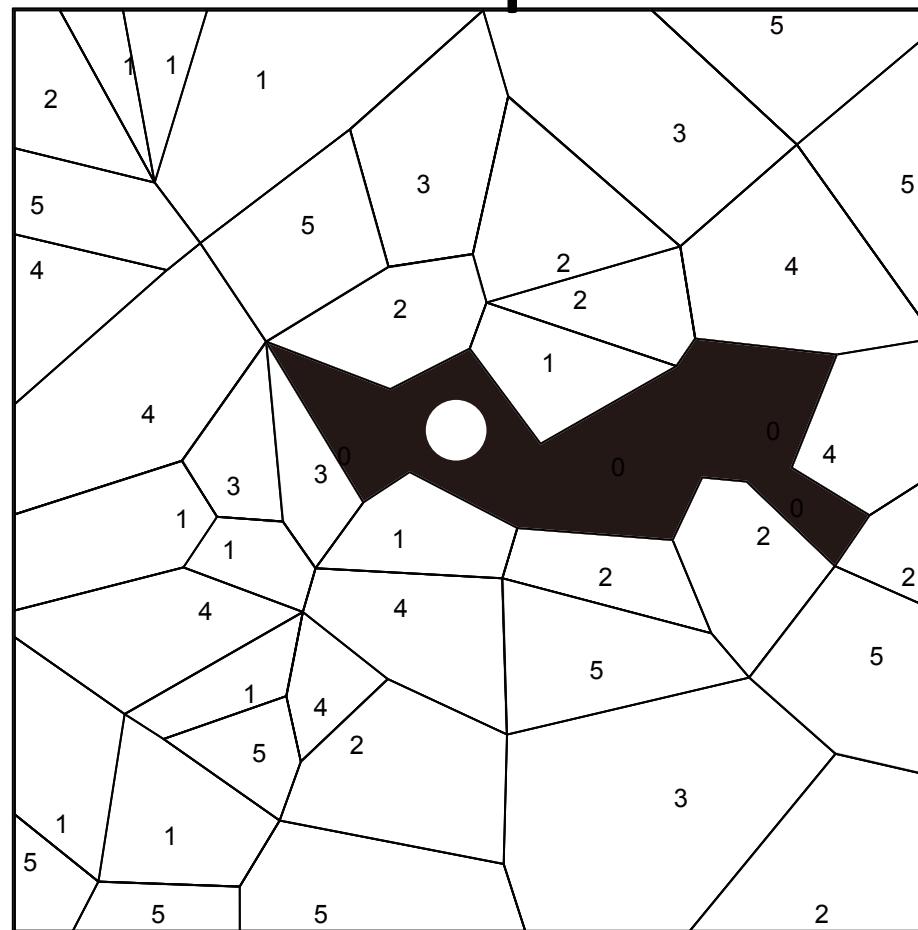
46 Units Example Map



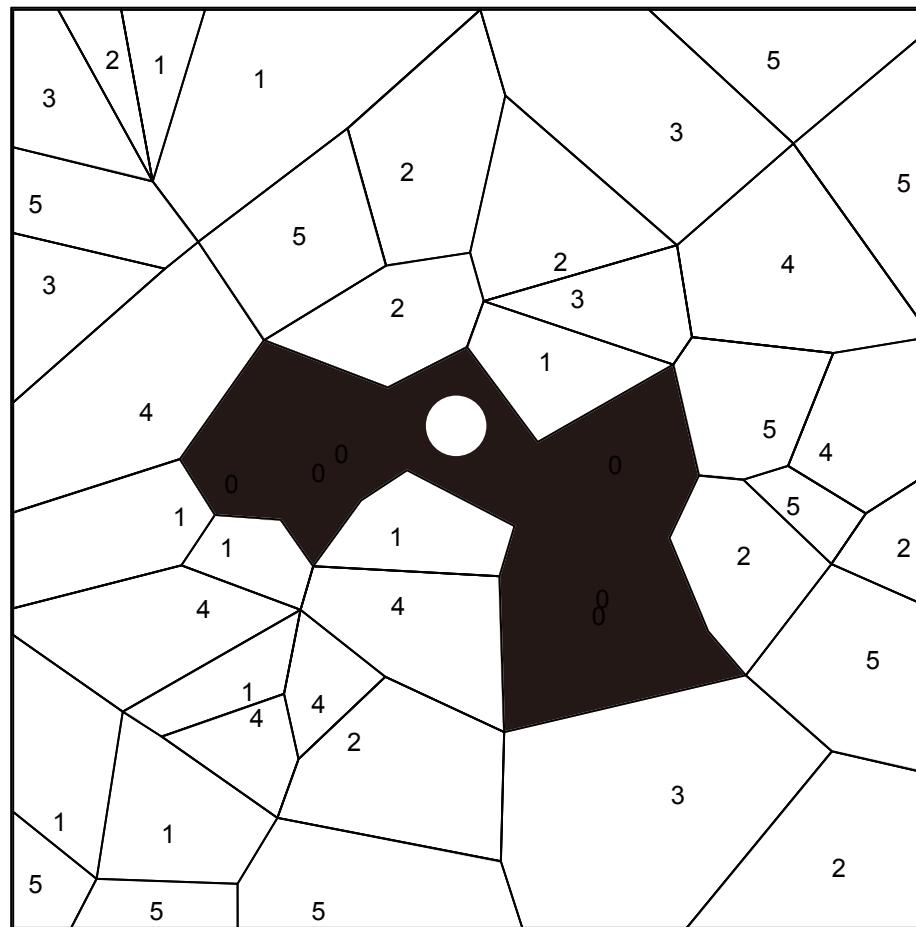
10ha for min & 20ha for max
over 5 periods



20 ha for min & 20ha for max
over 5 periods



30 ha for min & 20ha for max
over 5 periods



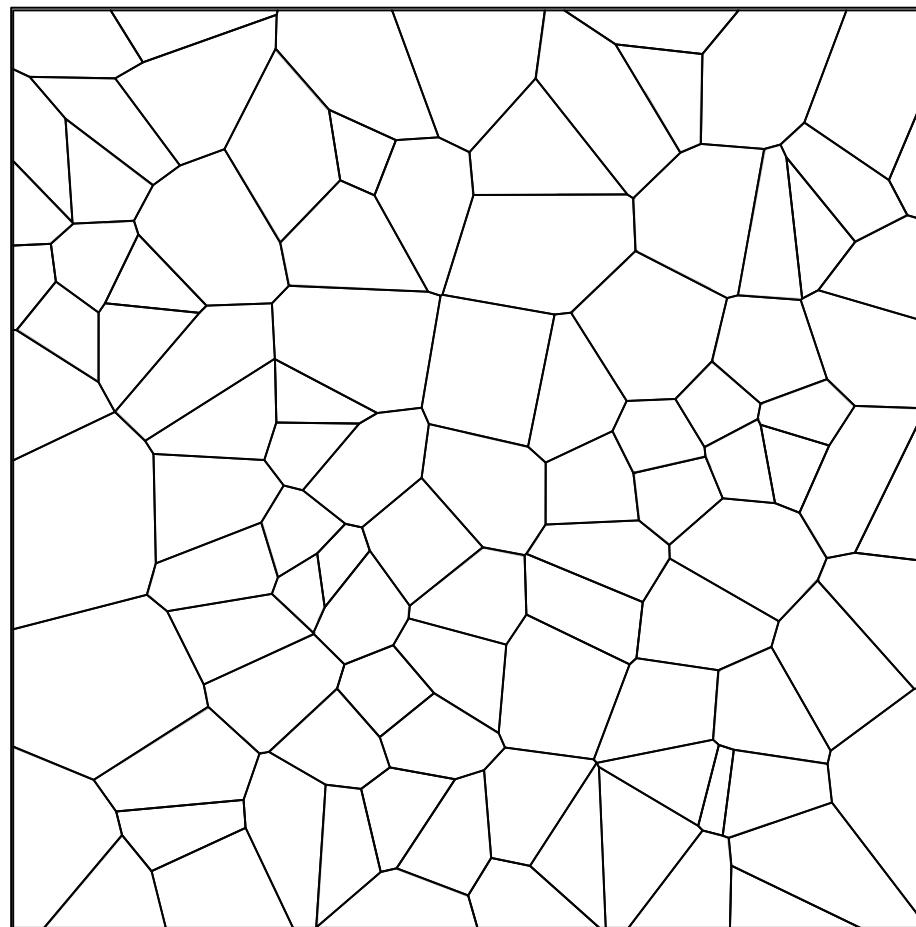
Focal-Point Aggregation

Creating focal-point aggregation
for particular units smaller

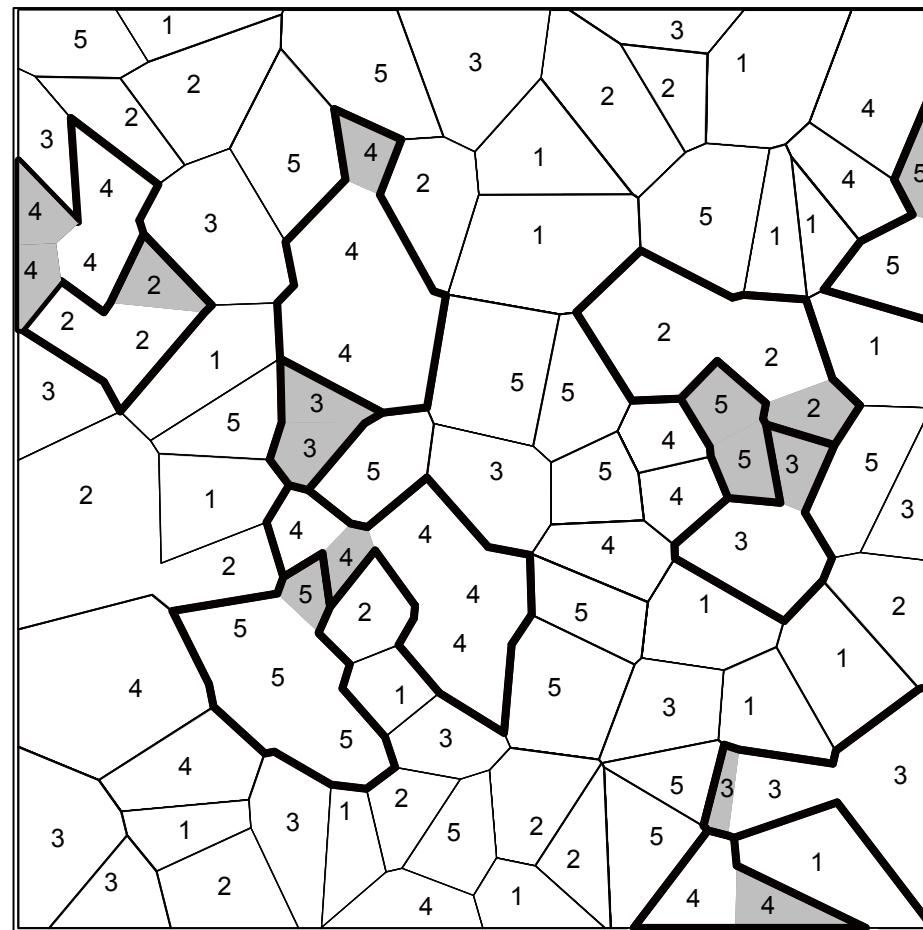
$$w_{i0} \geq L_{\min}^f \cdot y_{i0}, \forall i \in S^f$$

L_{\min}^f : minimum size

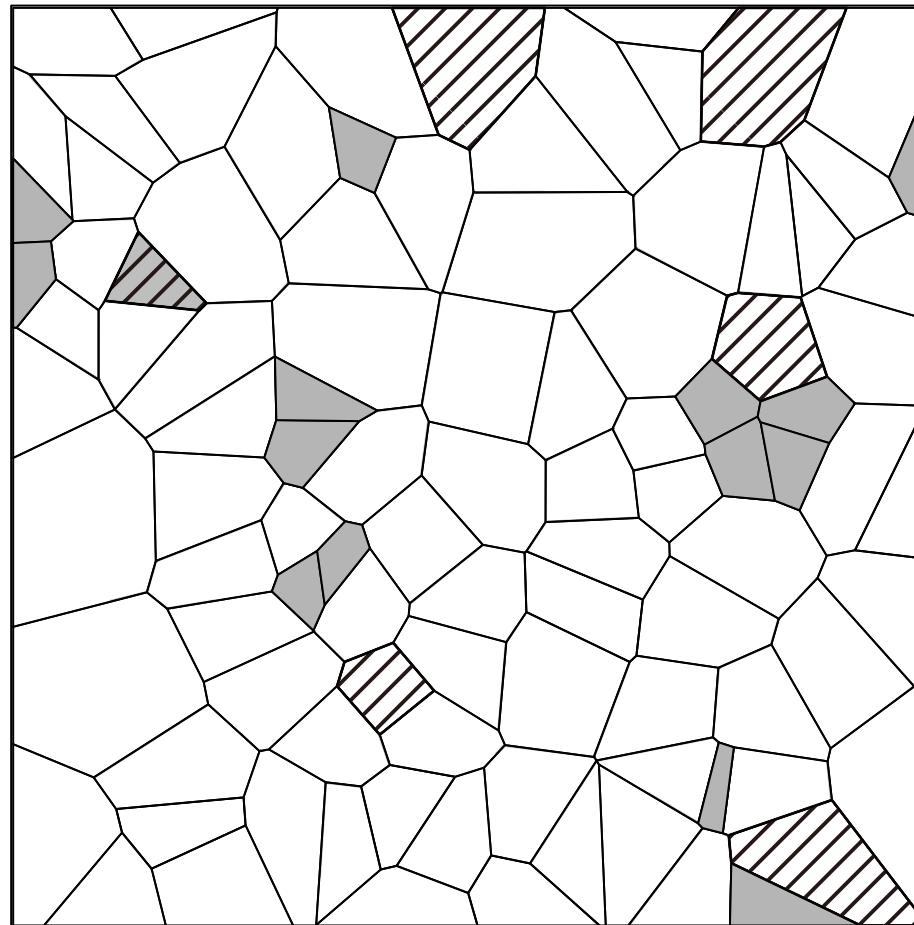
100 Units Example Map



Units greater than 5ha & 50ha max over 5 periods



Units of Smaller than 5ha and Old Growth Units



Units greater than 5ha & 20ha for preservation over 5 periods

